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# Feasibility Study Of LLOYD D. JACKSON SQUARE PARKING GARAGE City Of Hamilton Ontario



TRAFFIC • TRANSPORTATION • PARKING & PLANNING CONSULTANTS

TORONTO ONT.

CLEVELAND, OHIO





Feasibility Study Of  
**LLOYD D. JACKSON SQUARE**  
PARKING GARAGE  
City Of Hamilton Ontario

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TRAFFIC • PARKING • HIGHWAYS • TRANSIT • ECONOMICS • DESIGN • CITY PLANNING

110 YONGE STREET  
TORONTO 1, ONTARIO

CLEVELAND TRANSIT BUILDING  
CLEVELAND, OHIO 44114  
AREA CODE 216 241-0600

Mr. Chairman and Members  
The Board of Control  
City of Hamilton  
City Hall  
Hamilton, Ontario, Canada

January 26, 1972

Re: Lloyd D. Jackson Square Garage Feasibility Study

Gentlemen:

We are pleased to transmit, herewith, our Report covering the subject project study as authorized by the Board of Control and transmitted to us on November 10, 1971.

Principal important findings are that, (1) a parking structure, well in excess of 800 spaces, will be needed to serve just the Civic Center development block buildings, (2) that the Yale Properties group is planning to provide at least 1,200 spaces less than their proposed buildings will require, (3) that a parking structure containing between 870 and 1,000 spaces is physically practical in a 3.2 acre land area, without having to also use a 1.2 acre area under the proposed Trade and Convention Center, (4) that the project as recommended herein, 870 to 980 spaces, will be economically feasible and (5) that at least two private investors are interested in developing this facility at no cost to the City and subsequently vacating it for the City's acquisition at no cost.

It was also substantiated after some basic design work by structural, electrical, mechanical and other engineering consultants that the construction cost should not exceed \$3,700 per car space and that the total development cost, including all design, financing, legal and operating equipment charges, should be under \$4,000 per space.

It has been a privilege for all of us to serve the City of Hamilton in such an important capacity and we sincerely trust that we shall be authorized to continue to assist the City in bringing this project to an early and successful conclusion.

Respectfully submitted,

E. A. BARTON & ASSOCIATES, LTD.

Eugene A. Barton, President

EAB/mp

MONTREAL 101, QUEBEC      CALGARY 9, ALBERTA

CLEVELAND, OHIO • BALTIMORE, MD • DALLAS, TEX • SAN FRANCISCO, CAL • NEW YORK, N.Y.





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## INTRODUCTION

### GENERAL

The City of Hamilton is presently in the process of revitalizing its downtown and, to date, a number of new governmental and institutional buildings have been completed, among them being a City Hall and a Board of Education Headquarters. More recently, ten City blocks were combined and replanned as two super-blocks, one to be redeveloped by private enterprise and the other by the City. A ten million dollar Civic Theater is already under construction in one block across from the City Hall and, in the same block, plans will soon be developed for; (1) a Trade and Convention Center, (2) an Art Gallery building atop the parking structure and (3) an addition to the Board of Education building.

These new facilities will be generating a need for a substantial number of vehicular parking spaces. Being fully aware of this fact and that the parking should be located in close proximity to this super-block complex of civic buildings, the City included in its planning a provision for a multi-level parking structure to be developed within this same block. Because most of the ground area is to be occupied by the four major buildings, parking has to go underground.

### PURPOSE AND SCOPE

In order to determine the economic feasibility of underground parking and whether a practically functional facility, both from a traffic and pedestrian viewpoint, is possible and feasible, the City decided to retain an experienced parking, traffic and economic consultant to make studies and to advise the City accordingly. This firm and its team of local engineering specialists were selected for that assignment from a number which has been considered.





The area selected for study was that which can be considered to be within an acceptable walking distance of the proposed parking garage access portals. This area consists of approximately 19 City blocks which are bounded on the North by Merrick Street, on the East by Hughson Street, on the South by Hunter Street and on the West by Bay Street.

Another important determination which had to be made was how the parking structure could be coordinated with one or two other type structures atop (Art Gallery and perhaps the Trade and Convention Center) and other adjoining, existing buildings.

This phase of the assignment was to be borne primarily by the Structural, Electrical and Mechanical engineering specialists, namely, Foundation of Canada Engineering Corp., Quist & Associates, Ltd., and L. H. Schwindt & Co., Limited respectively with the functional part and the overall design coordination being done by E. A. Barton & Associates, Ltd.

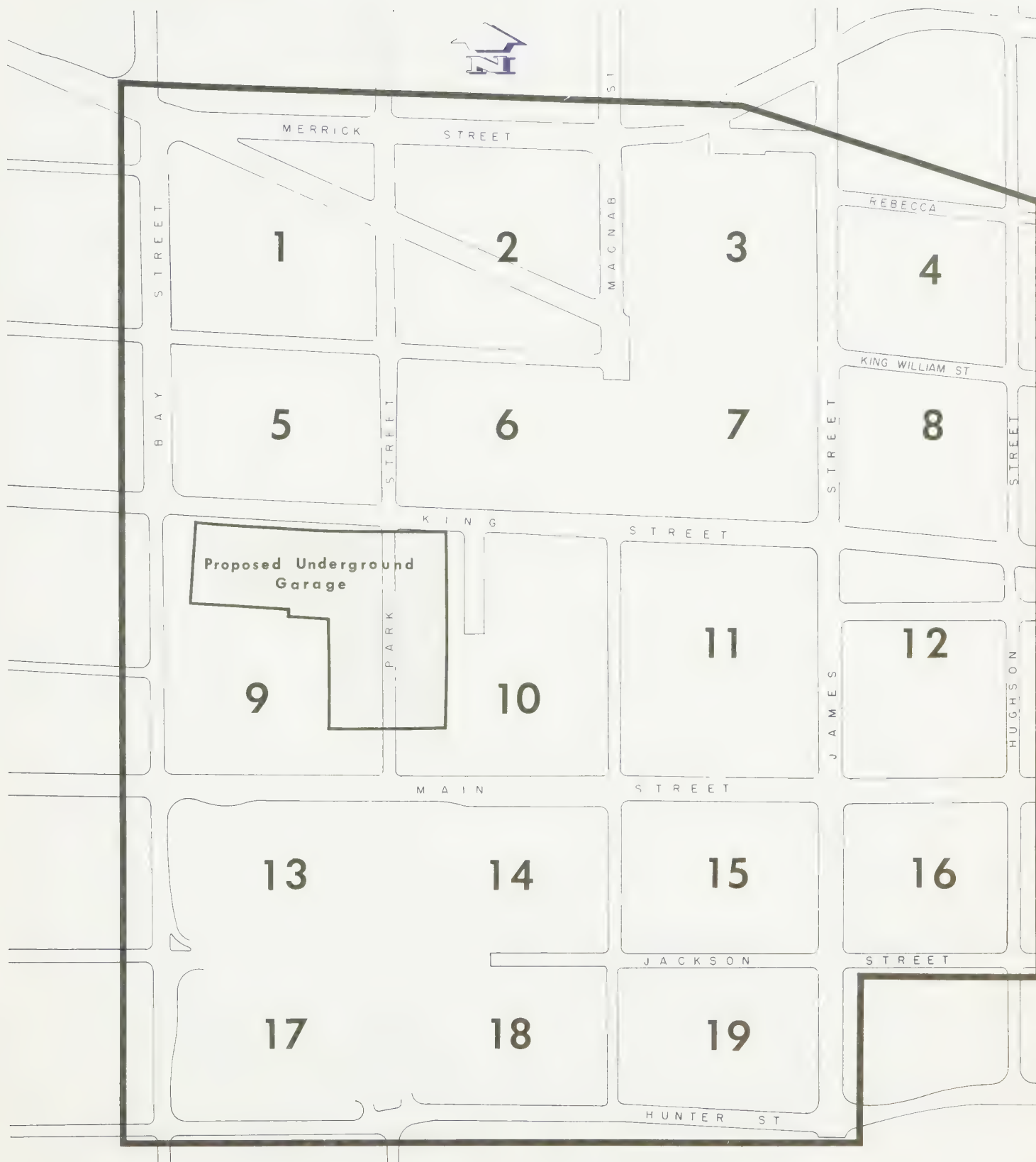
#### ACKNOWLEDGEMENT

Acknowledged, herewith, by our entire team is the close cooperation and excellent assistance which was rendered by the Coordinator of Civic Square, R. C. Monaghan; City Engineer, W. Wheten; Traffic Commissioner, R. Desjardins and members of their respective departments.

#### MAP OF AREA STUDIED

Shown on the following page is a map of the area studied with blocks numbered for reference in the report and indicating thereon the project site location.





**MAP OF AREA STUDIED**  
 FOR  
**LLOYD D. JACKSON SQUARE GARAGE**  
 HAMILTON, ONTARIO  
 NOVEMBER 1971





## METRO HAMILTON GROWTH TRENDS

### GENERAL

The physical and economic growth trends of a city are vital elements in determining the economic soundness of any proposed new development, and especially off-street parking structures. A healthy growth record which has continued steadily over a period of years assures an excellent potential use factor base for projecting parking revenues while planned new generators provide a means for determining the extent of need for additional parking.

These important trends are usually measured by population growth, increases in vehicle registration, wholesale and retail sales records, per capita buying power, new building permits, etc. Summary highlights of study findings in these growth trends are listed below and on pages following.

### POPULATION GROWTH

Thirty years ago (1941) the City of Hamilton population was 165,771. By 1951 it grew to 213,024, by 1961 it was 266,707 and in 1971 it reached 318,294, an increase of 92.% in the 30 years or an average of 3.07% per year. Each decade of growth was almost equal, ranging from 47,253 to 53,683 and to 51,587 respectively.

Shown below are Hamilton population figures by five (5) year increments.

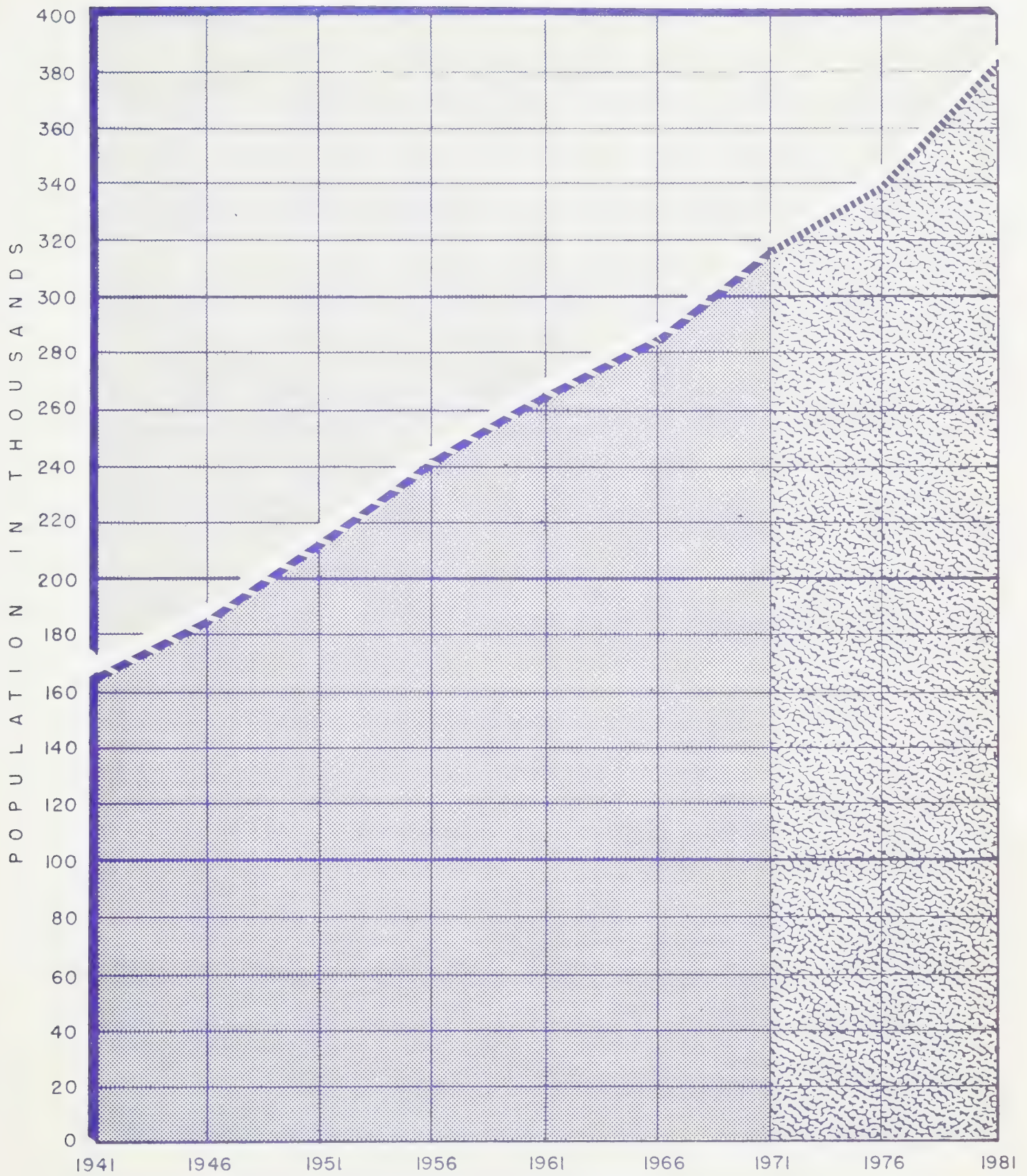
TABLE #1 - POPULATION GROWTH

<u>YEAR</u>	<u>POPULATION</u>	<u>Over Preceeding 5 Year Period</u>	<u>Cumulative Yrs. From 1941</u>
1941	165,771	---	---
1946	185,842	12.1%	12.1%
1951	213,024	14.7%	28.5%
1956	241,484	13.4%	45.6%
1961	266,707	10.7%	60.0%
1966	285,649	7.5%	73.2%
1971	318,294	<u>11.5%</u>	<u>92.0%</u>
	AVERAGE	11.65%	
	TOTAL		92.0%

See graphic chart (Fig. 2) for detailed illustration of each of the 30 years population figures.







POPULATION GROWTH ... 1941-1971  
AND ESTIMATED TO 1981



## VEHICLE REGISTRATION

Another positive indication of a City's growth is provided through motor vehicle registration statistics. Data obtained from the Department of Transportation covered the years 1950 through 1970; twenty-one years.

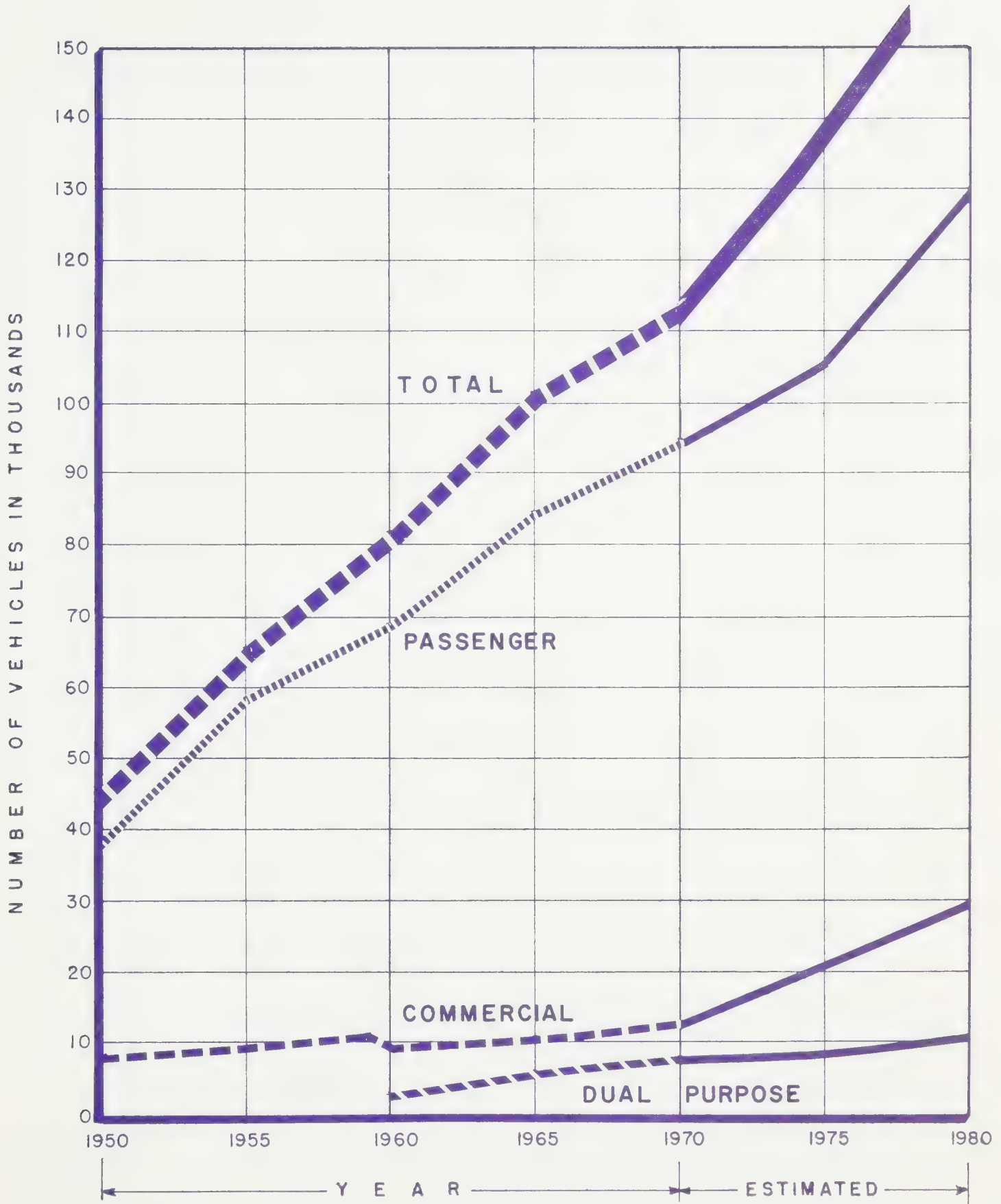
It can readily be seen from the table following that whereas population in Hamilton increased 92% in 30 years, automobile registrations were up 142.% in only a 20 year period, from 39,016 in 1950 to 94,504 in 1970. Commercial vehicle registrations also increased but at a slower pace, from 8,027 in 1950 up 53.8% to 12,332 in 1970. Beginning in 1960, a record was also kept of a third category, dual purpose vehicles which in 1960 amounted to 3,427 and increasing 132.% to 7,929 in 1970.

TABLE #2  
VEHICLES REGISTERED BY HAMILTON RESIDENTS

<u>YEAR</u>	<u>PASSENGER</u>	<u>COMMERCIAL</u>	<u>DUAL PURPOSE</u>	<u>TOTAL</u>
1950	39,016	8,027	N.A.	47,043
1951	42,528	8,120	N.A.	50,648
1952	47,004	8,165	N.A.	55,169
1953	51,501	8,307	N.A.	59,808
1954	54,898	8,554	N.A.	63,452
1955	58,473	9,024	N.A.	67,497
1956	61,213	9,462	N.A.	70,675
1957	62,988	9,873	N.A.	72,861
1958	64,037	9,946	N.A.	73,983
1959	67,028	10,064	N.A.	77,092
1960	69,633	9,763	3,427	82,823
1961	72,037	9,579	4,051	85,667
1962	71,616	7,848	4,315	83,779
1963	73,807	10,186	5,012	89,005
1964	77,379	10,265	5,564	93,208
1965	84,933	10,443	6,795	102,171
1966	89,086	11,026	7,394	107,506
1967	88,783	11,369	7,364	107,521
1968	96,706	11,178	8,568	116,452
1969	96,463	11,610	8,062	116,135
1970	94,509	12,322	7,929	114,760







MOTOR VEHICLE REGISTRATION 1950 - 1970

HAMILTON • ONTARIO





When evaluated as to population figures, the passenger automobiles per capita registered was one auto for every 5 residents in 1951 and one for every 3.15 in 1970. However, when dual purpose (personal and commercial) registration were included, the 1970 ratio falls to one vehicle per 2.84 (1) residents. The heaviest 5-year drop occurred in the period from 1951 to 1956 when the per capita ratio was reduced 21.2%. (1) Does not include strictly Commercial Vehicles)

In addition to the ever increasing number of motor vehicles being purchased and placed in service, a greater use is being made of these vehicles. They are being driven more miles and the frequency of downtown visitations is growing in number.



## PHYSICAL INVENTORY OF AREA STUDIED

### GENERAL

The physical condition analysis of an area, particularly with respect to streets, traffic circulation, and the number and types and sizes of existing "parking generator" buildings which are scheduled to remain after the redevelopment program has been completed, is an important phase of any parking need and feasibility study. Reason? Because of the impact each of these remaining conditions will exert upon the area as a whole and their effect in determining future parking capacity requirements; also in shaping the basic design concept of parking structures, particularly with respect to location of ingress and egress portals.

### PRESENT & FUTURE STREETS

The area studied, encompassing 19 City blocks, is interspersed with streets which are primarily limited to one directional traffic movement. Key streets which serve the City's redevelopment block are all one-way as are the streets which surround the adjoining private development block. These streets are:

<u>STREET</u>	<u>LOCATION</u>	<u>DIRECTION</u>	<u>SERVING</u>
Main Street	So. Side City Blk.	Eastbound	Civic Block Only
King Street	Between Both Blks.	Westbound	Both Blocks
Merrick Street	No. Side Private Blk.	Eastbound	Private Block Only
Bay Street	West End Both Blks.	Northbound	Both Blocks
James Street	East End Both Blks.	Southbound	Both Blocks

Because of the buildup of traffic densities on these five (5) streets and due to their limited width, ranging from 38' to 57' each, curbside parking has been eliminated in order to facilitate traffic movement.

Physical changes in the street pattern are taking place as a result of the combining of ten city blocks into two "superblocks". Parts of each street (shown on the following page) have been or will be closed to traffic to become extensions to land areas for building development.





<u>STREET NAME</u>	<u>LENGTH OF CLOSURE</u>
Park Street , North	3 Blocks
McNab Street , North	3 Blocks
Market Street	3 Blocks
Charles Street	1 Blocks
York Street	3 Blocks

Park Street and McNab are each North-South traffic carriers and whereas Park previously had a 2-block segment (Main to Hunter) discontinued to create a larger area for the development of a new City Hall, McNab Street is a local C.B.D. street which will now have a 3-block segment (Main to Merrick) eliminated.

These closures of Park and McNab streets will result in their displaced North-South C.B.D. traffic being moved and added to Bay Street and James Street, they being the West and East Street boundaries of the two new "superblocks".

Also, East-West C.B.D. traffic displaced by the closure of York and Market Streets will now have to use Merrick Street and King, they being the North-South boundaries of the two new superblocks.

#### PARKING GENERATOR BUILDINGS

A survey for that purpose revealed that, in addition to parking generator buildings which are to remain, two major super-blocks being redeveloped, one by the City of Hamilton and the other by a private developer, will contain a substantial number of new parking generator buildings. With two exceptions, all old structures within a 10 city block area comprising the two super-blocks have been or will be removed to make room for new buildings. The two exceptions are the existing Board of Education Building already in operation in the westerly end of the Civic block and Eaton's Department store in the East end of the "Yale" block.

A \$10 million theater is already under construction at the Easterly end of the Civic block and the City plans to build a Trade and Convention Center and an



Art Gallery building also in the same block. Total eventual gross square footage in each building is estimated to be as follows:

CIVIC CENTER BLOCK DEVELOPMENT

<u>Building Project</u>	<u>Gross Floor Area - Sq. Ft.</u>	<u>Net Rentable Area - Sq. Ft.</u>	<u>Parking Spaces</u>
Board of Education	130,000*	80,000	---
Civic Theater	169,000	100,000	---
Trade & Convention Center	85,000	70,000	---
Art Gallery	<u>150,000**</u>	<u>130,000</u>	<u>---</u>
TOTALS	534,000 Sq. Ft.	380,000 Sq. Ft.	870

\* Includes 97,000 existing and 33,000 future

\*\* Includes initial stage and future development

The Yale Properties development will take in an even larger area in that it encompasses the equivalent of seven (7) present city blocks whereas the City project only takes in 3-in-line between Bay and James Streets. New buildings proposed by "Yale Properties" are numerous and are to be developed in six (6) stages.

YALE PROPERTIES DEVELOPMENT

<u>Phase One Development</u>	<u>Gross Floor Area - Sq. Ft.</u>	<u>Net Rentable Area - Sq. Ft.</u>	<u>Parking Spaces</u>
Office Tower #1	401,797	342,356	---
Bank Building	55,124	47,313	---
Basement Storage & Services	33,591	---	---
Retail & Commercial	141,400	110,826	---
Cinemas	22,794	18,515	---
Malls	<u>29,037</u>	<u>---</u>	<u>---</u>
TOTALS	683,743	519,010	260



There will be five additional development phases in the Yale Properties super-block, all of which are scheduled for completion by mid-1976.

These five (5) phases are to contain 954,000 square feet of floor area in seven (7) buildings. Also planned are 810 apartment units. The seven buildings are to include a hotel, a department store and another office tower as well as retail-commercial space. It is proposed that an additional 878 parking spaces are to be included in these five (5) phases for a total of 1,138 spaces when the "Yale" super-block is fully developed.

### SUMMARY

Gross Floor Area	1,637,743 Square Feet
Net Rentable Area	1,330,000 Square Feet
Number of Housing Units	810 Units
Number of Parking Spaces	1,138 Spaces

According to the "Development Agreement" which was consummated between the Corporation of The City of Hamilton, and, Greater Hamilton Developers, Ltd. and Yale Properties, Ltd., on the 3rd day of September, 1970, all six (6) development phases are to be completed by April, 1976.

In summing up the proposed new structures that are to be located in the two "superblocks" the following gross floor area came into focus:

<u>Building Types</u>	<u>Civic Center Sq. Ft. Area</u>	<u>Yale Block Sq. Ft. Area</u>	<u>Total Area</u>
Offices	* 130,000	772,000	902,000
Trade & Convention	82,000	---	82,000
Department Stores	---	226,660	226,660
Retail-Commercial	---	218,640	218,640
Theaters	169,000	22,800	191,000
Hotel	---	170,000	170,000
Art Gallery	150,000	---	150,000
Apartments (810 Units)	---	670,000	670,000
Banking	---	55,120	55,120
Storage	30,000	68,523	98,523
Services	44,000	46,000	90,000
Malls & Public Space	<u>30,000</u>	<u>58,000</u>	<u>88,000</u>
TOTALS	635,000	2,307,743	2,942,743

\* Includes existing Board of Education Building and proposed expansion.





## EXISTING BUILDINGS TO REMAIN

There are a number of existing buildings within the 19 block area studied, some new and some old, which are to remain. Because these buildings presently generate a need for parking spaces, it is important that they also be inventoried as to use types, size and space capacity in square feet.

Parking generator buildings in five blocks immediately adjacent to the two "super-blocks", to the West, will also exert some impact upon parking facilities developed within the two super-blocks. Therefor, these have been included in this phase of the study. An inventory of these buildings revealed that there are 15 office and commercial buildings, 2 churches, 41 residences and a City Hall.

The total gross floor area in the existing buildings to remain amounts to approximately 1,166,000 square feet of floor space of which 960,000 are located within the area studied and 206,000 in five (5) blocks adjacent thereto. The existing buildings group does not include the Civic Theater which is still under construction.

Shown below is a composite summary of all the non-parking type floor area, in square feet, both existing and in construction and planning stages within the 24 city block area which will presumably be within acceptable walking distance of the Lloyd D. Jackson Square garage and should therefor be included in the determination of total present and future parking space requirements.

<u>TYPE OF SPACE</u>	<u>TOTAL FLOOR AREA</u>
*Existing Buildings	1,166,000 sq. ft.
New Civic Buildings	635,000 sq. ft.
New by Yale Properties	<u>2,307,743 sq. ft.</u>
Total Floor Area	4,108,743 sq. ft.

\*NOTE: Existing buildings in four (4) blocks of the study area all East of James Street were not included in the existing floor area inventory because they are now considered to be out of the range of an acceptable walking distance of the Lloyd D. Jackson Square Garage since its Easterly limit has been stopped at the Park Street line.



The total floor area shown on the preceding page represents the gross floor area in existing buildings to remain and in the new buildings proposed. This is not the area which is used as a base in determining parking space needs because it includes all such non-productive and/or non-rentable space as, lobbies, hallways, storage rooms, machinery and equipment rooms, elevators, stairs columns, walls, etc., etc.

This non-productive building and utilitarian public space consists of anywhere from 20% to as much as 40% of the gross floor area of a building, the actual amount usually depending upon its use type. For example, the Civic Theater has a gross floor area of 169,000 square feet and its public non-rentable space is 68,000+ square feet, or 40%, whereas, the Trade and Convention Center Building should produce 75 to 80% of net rentable space.

According to best information available it was estimated that the net rentable area in all buildings, existing to remain and those proposed, within the 15 City block area bounded by Merrick, James, Main and Bay Streets, plus those which are located on the West side of Bay Street and between Napier and Hunter Streets, will amount to approximately 2,875,000 square feet. The parking space requirement for this amount of productive floor space, when averaged against the total, was determined to be 1.77 spaces per 1,000 square feet or, 5,088 spaces.





## PARKING INVENTORY

### GENERAL

In developing a current inventory of existing curb and off-street parking facilities within the boundary of the specific area studied, our field staff made tallies of parking spaces in each existing off-street facility and at curb locations. It was advisable to determine the number, type and capacity of all public and private parking facilities in the area in order to appraise the type and class of service being provided and whether the parking supply was adequate to fulfill the existing demand. Such basic information was also partially instrumental in developing parking revenue estimates.

A detailed inventory is described below and illustrated graphically on the following pages.

### OFF-STREET PARKING FACILITIES

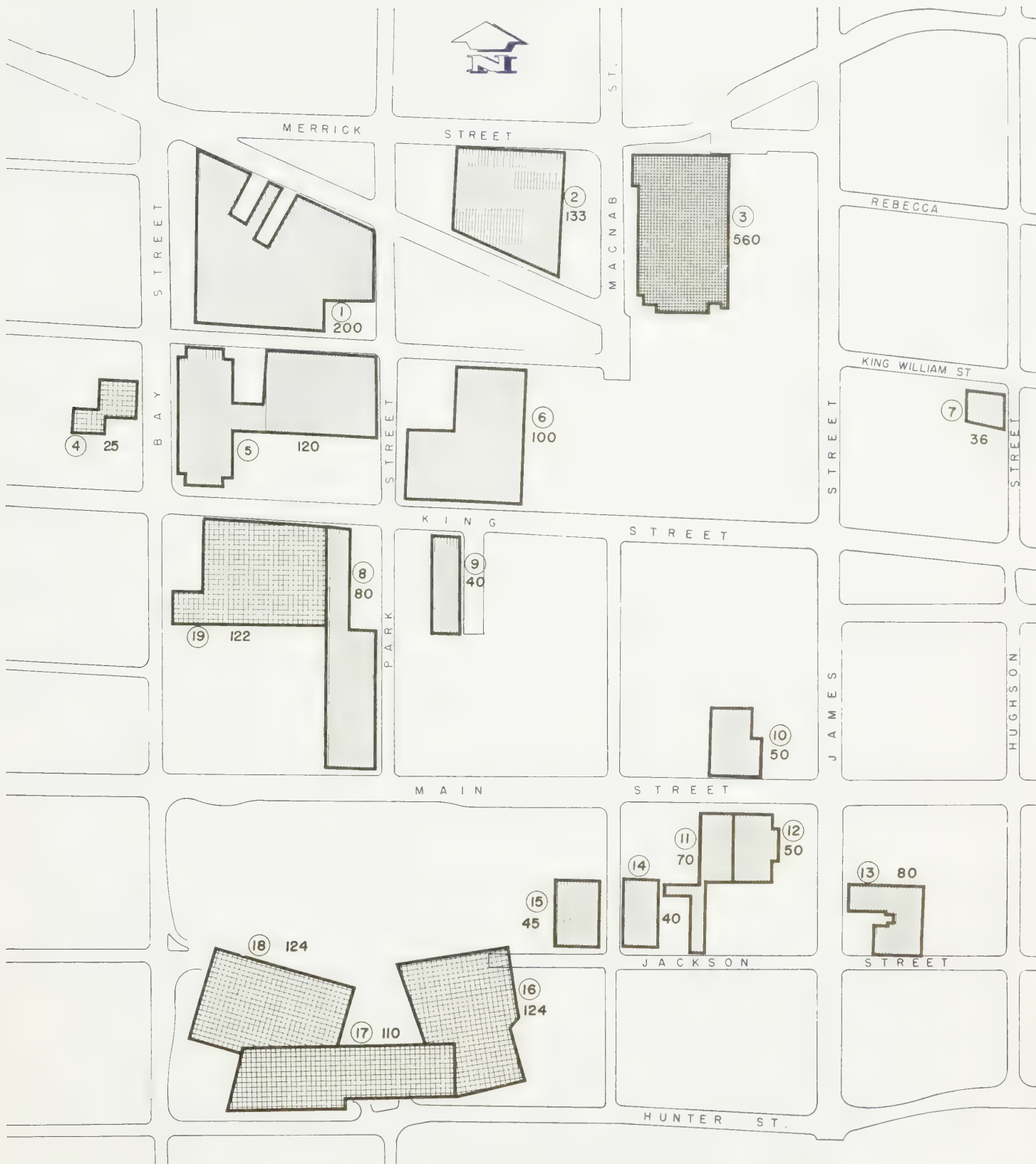
In November, 1971, when this study was conducted, there were 19 off-street parking facilities within the 19 block study area, containing a total of 2,109 spaces. All but one were surface lots, and only twelve (12) lots and the one multi-level parking structure were open to the general public. Total capacity in these thirteen (13) public facilities was 1,604 spaces. The remaining six (6) lots which primarily served office buildings, motels, a department store and other commercial establishments contained a total of 505 spaces. Also all but seven (7) of the nineteen (19) city blocks within the study area contained one or more parking facilities.

Seven of the nineteen (19) parking lots, containing a combined total of 795 spaces, are located within the ten (10) blocks destined for redevelopment. These 795 spaces, or 38% of the total, will soon be eliminated thereby reducing the 19 block area's off-street parking total to only 1,314 spaces.

### CURB PARKING SPACES

There are no on-street parking spaces within the nineteen (19) block area studied. All have been removed to facilitate daily traffic flow.





## EXISTING OFF-STREET PARKING

HAMILTON, ONTARIO  
NOVEMBER 1971

FIG.4



## PARKING RATES CHARGED

Parking charges in the public lots and the one garage varied considerably. First 1/2 hour charges ranging from 10 cents to 35 cents were in existence in seven (7) lots. The garage and two lots charged 25 cents for the first hour. All day rates ranged from 50 cents to \$2.00 and, evening, the rate was 50 cents in all but one which charged 35 cents. Shown below is a summary table.

<u>PARKING RATE</u>	<u>NO. OF FACILITIES</u>
\$ .10 1st 1/2 hour	3
.25 1st 1/2 hour	1
.30 1st 1/2 hour	1
.35 1st 1/2 hour	2
.15 2nd 1/2 hour	1
.20 2nd 1/2 hour	1
.30 2nd 1/2 hour	2
.35 2nd 1/2 hour	1
.25 First Hour	3
.35 First Hour	1
.15 Ea. Add'l Hour	1
.25 Ea. Add'l Hour	4
.30 Ea. Add'l Hour	1
.35 Ea. Add'l Hour	2
.40 Ea. Add'l Hour	1
.50 All Day	2
1.00 All Day	1
1.25 All Day	1
1.50 All Day	2
1.75 All Day	2
2.00 All Day	5
.35 Evening	1
.50 Evening	11

NOTE: Monthly parking is available in some surface lots but not all facilities and not the garage. Where it is available, the rate ranges from \$15.00 to \$25.00 per month. Free parking is presently permitted on the three areas behind City Hall and in the Board of Education lot. These four contain a total of 680 spaces, or 32% of the total.





## PARKING SPACE UTILIZATION

### GENERAL

This study phase was essential to provide history data in establishing parking space usage and parking capacity requirements by and for existing buildings which are to remain. Because of the substantial changes and new generators which are being planned for the two adjoining Lloyd D. Jackson Square super-blocks the current parking space use information cannot be considered as having the major influence upon future parking needs, but, it does have a contributing value.

### OFF-STREET OCCUPANCY

A check was made within each of the 19 facilities, each hour during two weekdays (Wednesday and Thursday), Nov. 17 and 18, and a Saturday, Nov. 20th. The weekday tallies of vehicles parked hourly were made over 10 hour periods from 9:00 A.M. to 7:00 P.M. while on Saturday an eight (8) hour period ending 5:00 P.M. was selected. The study results revealed that on Wednesday only five (5) of the 19 facilities reached a full mark and three (3) others exceeded 90%. On Thursday, five (5) also made the full target while only one exceeded 90% and on Saturday two (2) reached the full mark and one exceeded 90%.

Overall average occupancies were much lower however, ranging from 51% at 9:00 A.M. to 65% from 1:00 to 3:00 P.M. on Wednesday and Thursday to 32% at 9:00 A.M. and 52% at 11:00 A.M. and 12:00 Noon on Saturday. See detailed summary tables on pages following.

When the occupancy of parking lots and garages exceeds 95% of capacity, parking vehicle maneuvering space is reduced to the point of congestion which results in the vehicles experiencing difficulty in entering and leaving parking spaces. This becomes a time delaying factor which contributes to a reduction in rates of space use or turnover.

It is interesting to note that three of the most heavily used lots which reached the full mark during several hourly periods daily were the three (3) (no fee) City owned lots comprising the total parking area behind City Hall. One of



these was also "FULL" Saturday lot. A further observation was made of these three "free" parking lots because of comments overheard that other than City Hall employees and/or City Hall visitors were using these facilities. Persons who parked their vehicles in these lots were followed and substantial numbers each day walked through the lobby and out the front door thereby substantiating the opinion that these "free" parking lots, as presently operated, are difficult to control for the exclusive use of the City Hall.

Further observations were made by this consultant of parking conditions within the three parking lots behind City Hall after the mid-November study. These observations were made on the following six (6) days.

December 14, 15, 28  
January 4, 11, 19

In each case, the parking lots had reached a "full" or near full condition by or before 9:30 A.M. and in the two lower level areas several vehicles were parked in driving aisles, (driver attended, however) in a "wait or holding" pattern, like planes do awaiting their turn to land at an airport, hoping for a vacancy to be made by a departing vehicle.

This early morning "full" condition is not justified because the employee and staff parking needs do not exceed 250 vehicle spaces and it is most unlikely that 100 or more motorist visitors reach the City Hall before 9:30 A.M., at least 10 days out of 10 special study days.

It should be noted, however, that the low occupancy rates recorded in five (5) of the parking facilities did not represent a normal condition. Access to some has been made difficult and/or undesirable as a result of construction and street closures caused by the conversion of 10 City blocks into two super-blocks. Also, several parking generator buildings have already been demolished as part of the "super-blocks" preparation program.



CODE

Pub. = Public

Pri. = Private

L = Lot

G = Garage

HOURLY OCCUPANCY CHECK OF OFF-STREET PARKING FACILITIES

TIME OF CHECK - PERCENTAGE OF OCCUPANCY

(Wednesday)

No.	Code	Capacity	9:00 AM	10:00 AM	11:00 AM	NOON	1:00 PM	2:00 PM	3:00 PM	4:00 PM	5:00 PM
1	Pub. L.	200	50%	50%	50%	54%	56%	53%	50%	46%	18%
2	Pub. L.	133	15%	29%	29%	27%	28%	29%	20%	9%	4%
3	Pub. G.	560	25%	35%	39%	45%	50%	47%	50%	40%	19%
4	Pri. L.	25	48%	56%	52%	60%	72%	60%	48%	64%	48%
5	Pub. L.	120	91%	88%	91%	87%	87%	88%	84%	71%	17%
6	Pub. L.	160	28%	30%	31%	38%	33%	33%	41%	33%	20%
7	Pub. L.	36	39%	64%	64%	67%	67%	61%	61%	33%	33%
8	Pub. L.	80	F-	F-	93%	88%	79%	86%	83%	80%	68%
9	Pub. L.	40	10%	10%	38%	38%	65%	35%	25%	18%	13%
10	Pub. L.	50	64%	F+	F	F-	F	94%	92%	80%	88%
11	Pub. L.	70	54%	77%	56%	79%	71%	90%	86%	63%	53%
12	Pub. L.	50	20%	66%	84%	62%	68%	80%	70%	58%	42%
13	Pub. L.	80	40%	88%	91%	94%	93%	86%	79%	71%	55%
14	Pub. L.	40	F	75%	88%	F-	93%	F-	88%	F	93%
15	Pub. L.	45	F	F	F	91%	89%	91%	91%	F-	87%
16	Pri. L.	124	92%	94%	F-	94%	F-	F-	F-	F-	F-
17	Pri. L.	110	79%	79%	84%	85%	92%	92%	93%	F-	F-
18	Pri. L.	124	F	F-	F-	94%	F-	F-	F	F	93%
19	Pri. L.	122	72%	74%	64%	56%	57%	75%	85%	85%	70%
Average all Facilities		2,169	51%	60%	61%	62%	65%	65%	65%	58%	43%

CAPACITY CODE: E = Empty; F = Full; F- = 95% rated capacity; F+ = 105% or more rated capacity





HOURLY OCCUPANCY CHECK OF OFF-STREET PARKING FACILITIES

TIME OF CHECK - PERCENTAGE OF OCCUPANCY

(Thursday)

No.	Code	Capacity	10:00 AM	11:00 AM	12:00 NOON	1:00 PM	2:00 PM	3:00 PM	4:00 PM	5:00 PM	6:00 PM	7:00 PM
1	Pub. L.	200	56%	54%	54%	58%	60%	57%	53%	28%	12%	11%
2	Pub. L.	133	55%	60%	50%	47%	47%	38%	29%	26%	14%	15%
3	Pub. G.	560	47%	51%	47%	50%	50%	27%	25%	26%	25%	50%
4	Pri. L.	25	24%	24%	20%	40%	32%	36%	40%	28%	44%	28%
5	Pub. L.	120	79%	80%	80%	79%	76%	77%	61%	19%	8%	4%
6	Pub. L.	160	31%	41%	40%	38%	41%	36%	30%	27%	11%	11%
7	Pub. L.	36	69%	64%	61%	72%	61%	69%	67%	47%	69%	72%
8	Pub. L.	80	F	F	94%	85%	86%	88%	81%	71%	18%	13%
9	Pub. L.	40	48%	53%	70%	58%	58%	67%	48%	28%	25%	32%
10	Pub. L.	50	F	90%	94%	F-	92%	92%	86%	40%	34%	36%
11	Pub. L.	70	74%	83%	59%	61%	69%	64%	51%	30%	15%	30%
12	Pub. L.	50	76%	70%	76%	76%	62%	50%	32%	18%	20%	22%
13	Pub. L.	80	70%	74%	84%	76%	74%	31%	76%	43%	25%	25%
14	Pub. L.	40	F-	90%	85%	90%	88%	F+	75%	38%	35%	58%
15	Pub. L.	45	93%	F-	F	84%	87%	F	93%	56%	31%	69%
16	Pri. L.	124	F-	F	F-	F-	F-	94%	93%	84%	78%	F
17	Pri. L.	110	92%	90%	83%	84%	81%	86%	81%	20%	15%	27%
18	Pri. L.	124	F-	89%	F-	92%	F-	90%	90%	35%	39%	67%
19	Pri. L.	122	70%	77%	52%	54%	67%	78%	F-	F-	24%	18%
Average all Facilities		2,169	65%	67%	64%	64%	65%	57%	54%	37%	26%	37%

CAPACITY CODE: E = Empty; F = Full; F- = 95% rated capacity; F+ = 105% or more rated capacity



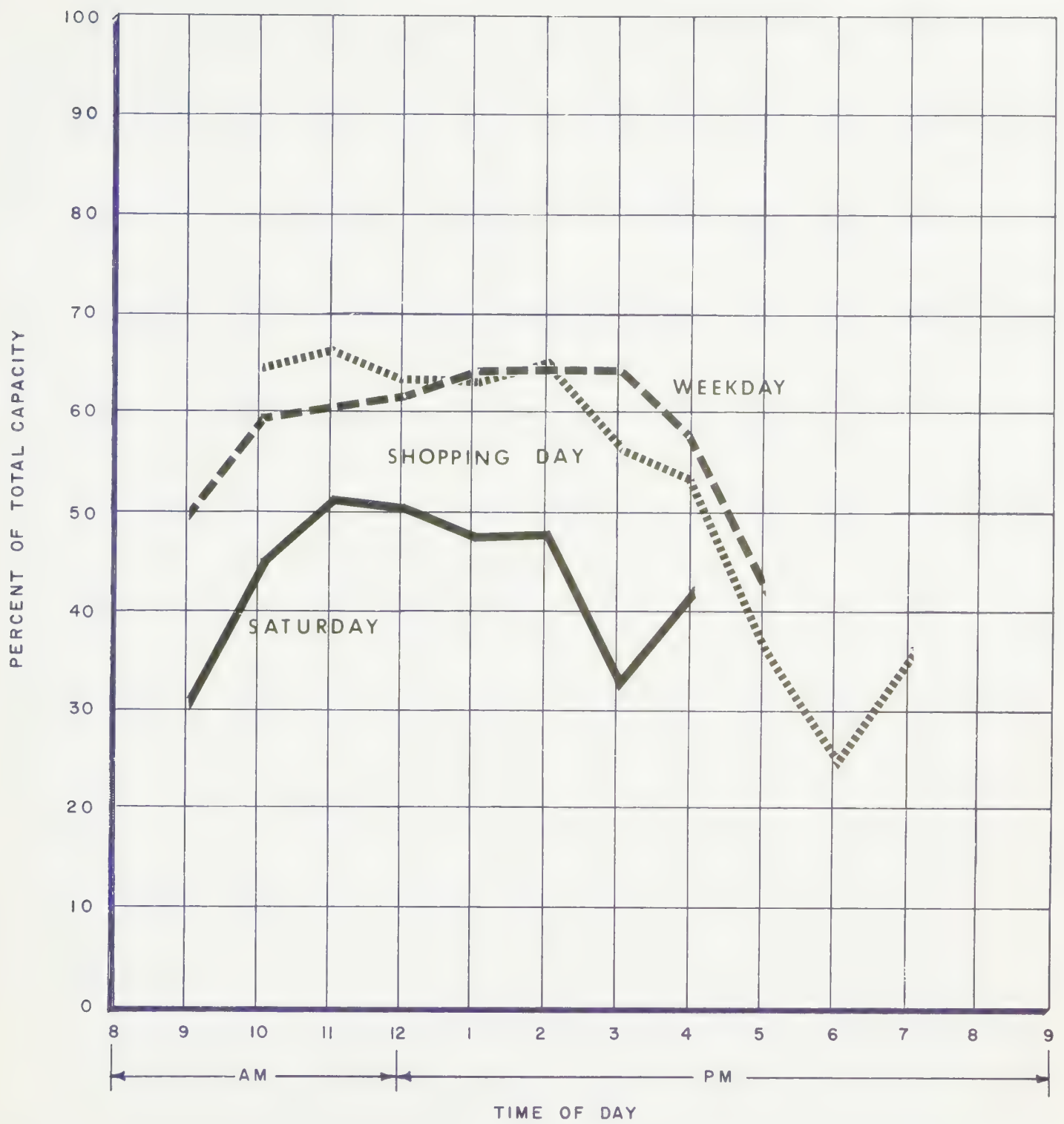
HOURLY OCCUPANCY CHECK OF OFF-STREET PARKING FACILITIES

TIME OF CHECK - PERCENTAGE OF OCCUPANCY  
(Saturday)

No.	Code	Capacity	9:00 AM	10:00 AM	11:00 AM	12:00 NOON	1:00 PM	2:00 PM	3:00 PM	4:00 PM
1	Pub. L.	200	9%	14%	19%	20%	22%	16%	16%	12%
2	Pub. L.	133	29%	69%	86%	68%	70%	F	F	65%
3	Pub. G.	560	50%	75%	75%	75%	70%	74%	75%	75%
4	Pri. L.	25	32%	24%	24%	12%	8%	20%	24%	16%
5	Pub. L.	120	3%	1%	3%	4%	3%	1%	1%	1%
6	Pub. L.	160	11%	13%	23%	25%	16%	23%	33%	23%
7	Pub. L.	36	50%	67%	64%	58%	64%	75%	72%	67%
8	Pub. L.	80	14%	20%	35%	44%	45%	33%	35%	30%
9	Pub. L.	40	22%	30%	65%	63%	50%	37%	45%	62%
10	Pub. L.	50	12%	22%	26%	32%	36%	28%	26%	20%
11	Pub. L.	70	11%	14%	28%	22%	26%	20%	13%	10%
12	Pub. L.	50	24%	20%	20%	18%	18%	20%	14%	18%
13	Pub. L.	80	33%	43%	41%	43%	43%	14%	13%	10%
14	Pub. L.	40	45%	60%	83%	63%	60%	48%	38%	28%
15	Pub. L.	45	71%	73%	84%	91%	89%	67%	58%	42%
16	Pri. L.	124	F-	F	F	F	94%	F	F-	90%
17	Pri. L.	110	5%	5%	14%	15%	14%	19%	21%	18%
18	Pri. L.	124	31%	60%	79%	74%	73%	60%	48%	36%
19	Pri. L.	<u>122</u>	<u>9%</u>	<u>15%</u>	<u>17%</u>	<u>18%</u>	<u>21%</u>	<u>14%</u>	<u>13%</u>	<u>12%</u>
Average All Facilities		2,169	32%	46%	52%	51%	48%	48%	34%	43%

CAPACITY CODE: E = Empty; F = Full; F- = 95% rated capacity; F+ = 105% or more rated capacity





## OFF-STREET PARKING OCCUPANCY

HAMILTON, ONTARIO

NOVEMBER 1971





## PARKING PATRON INTERVIEWS

### GENERAL

Another essential element in conducting a complete parking survey is the "Parking Patron Interview Study". It is a means of determining the downtown patrons' point of origin, their principal destination, their parking desires and their parking habits. A survey such as this was conducted on a sampling basis in which nearly 1,400 off-street parking patrons were interviewed.

A standardized interview form developed from experience was used to obtain a maximum of information during each interview in as brief a time period as possible, usually less than two minutes. The form is summarized below:

### TYPES OF QUESTIONS ASKED

The questions asked of drivers by the staff of interviews were:

1. Where did you drive from?  
(a) Home in City, (b) Suburb or other City, (c) Downtown,  
(d) Other.
2. What is purpose of being downtown?  
(a) Business, (b) Shopping, (c) Work, (d) Other, Miscellaneous.
3. What is your destination?  
(a) This block, (b) One block away, (c) Two blocks,  
(d) Three or more.
4. How long do you plan to stay?  
(a) One Hour or Less, (b) Two or More, (c) Half Day,  
(d) All Day.
5. How often do you come downtown?  
(a) Once a week, (b) Twice weekly, (c) Three times, (d) Daily
6. What do you think of downtown parking?  
(a) Hard to Find, (b) Easy to Find, (c) Prices Fair,  
(d) Prices High.



## RESULTS OF INTERVIEWS - CURRENT STUDY

The results of all survey data obtained through the interviews is summarized herewith. A composite summary was developed to obtain overall results and this is shown on a page following.

Several important results obtained from this "Patron Interview" study are as follows:

1. 46% of the motorists planned to stay only one hour or less.
2. 48% live within the City of Hamilton.
3. 21% were making business calls.
4. 66% were shopping patrons.
5. 47% parked within one block of their destination.
6. 19% came downtown daily.
7. 34% had difficulty finding conveniently located parking available.
8. 69% said that parking rates were fair while 31% said they were high.

It should be noted that although the 19-block study area presently contains an overall surplus of parking supply, estimated to be at least 469 spaces, 34% of all motorists interviewed stated that convenient parking was difficult to find. Also that 69% indicated present rates were fair, that 47% were able to park within one block of their destination and that 46% planned to park one hour or less.

The data contained, herein, represents a sampling survey, however, the results obtained may be assumed to be substantially representative of the conditions currently existing on an average week-day within the area studied. Changes are anticipated after the two "superblocks" have been partially and subsequently fully developed.



PATRON INTERVIEW SUMMARY

<u>ORIGIN OF TRIP</u>	<u>LOT PARKERS</u>	<u>GARAGE PARKERS</u>	<u>COMBINED AVERAGE</u>
From Home in City	41%	50%	47%
From Suburb	38%	46%	44%
Elsewhere Downtown	20%	4%	8%
<u>PURPOSE OF TRIP</u>			
Business	46%	11%	21%
Shopping	10%	88%	66%
Work	27%	.4%	8%
Other	17%	.8%	5%
<u>DESTINATION DISTANCE</u>			
This Block	47%	49%	49%
One Block Away	25%	11%	15%
Two Blocks Away	21%	17%	18%
Three or More	8%	23%	18%
<u>TIME PLANNED TO STAY</u>			
One Hour or Less	51%	46%	48%
Two or More Hours	26%	44%	39%
Half Day	3%	8%	7%
All Day	20%	1%	7%
<u>PARKING FREQUENCY</u>			
Once a Week	26%	65%	54%
Twice a Week	13%	18%	17%
Three Times a Week	17%	9%	11%
Daily	44%	8%	18%
<u>AVAILABILITY &amp; PRICE</u>			
Easy to Find	63%	68%	67%
Hard to Find	37%	32%	33%
Price Fair	53%	74%	68%
Price High	47%	26%	32%





## VEHICLE VOLUME & PARKED VEHICLE ACCUMULATION

### GENERAL

The traffic circulation and traffic densities on streets within a study area and surrounding zone of immediate influence affecting the proposed project site or sites are also important factors in making a parking analysis.

Traffic volume and turning movement studies are the methods generally employed for this purpose, however, these did not have to be done at this time because the City Traffic Engineering Department had made recent tallies which were of sufficient current value.

When traffic entering and leaving the Central Business District is also tallied during frequent intervals and at entry and exit portal streets, it provides another very valuable parking study result; the number of vehicles that have accumulated within the Central Business District, those parked, those seeking a parking space and those which are gradually making their way through the C.B.D. but having no stopping destination therein.

### VEHICLE VOLUME

A 1970, 24 hour volume study revealed that downtown traffic flow recorded was heaviest on Main Street, that King Street experienced the second heaviest volume, that James Street was third, Bay Street fourth and Merrick Street fifth with Hunter Street sixth. Shown below are the 1970 and subsequent 1971 traffic volumes on streets which surround and which flow through the nineteen (19) block area studied.

<u>Street Name</u>	<u>1970 24 Hour Day</u>	<u>1971 24 Hour Volume</u>
*1. Main Street	36,550	33,800
*2. King Street	21,670	N.A.
*3. James Street	18,000	19,200
*4. Bay Street	14,400	13,800
5. Merrick Street	11,780	11,240
6. Hunter Street	10,430	N.A.



\*These volumes were in blocks surrounding the Lloyd D. Jackson Square 3-block area. Volumes on Bay Street and on James Street, between King and Merrick Streets, dropped to 10,900 and 14,000 respectively. (N.A. = Not Available)

Although 24-hour traffic data is useful in determining traffic desire lines, thereby providing a basis for planning new thoroughfares and traffic flow patterns, it is the peak periods of maximum traffic densities that provide a realistic result for measuring the street capacity use ratio and for determining whether certain streets are capable of accommodating additional traffic during those peak periods, and, if so, to what extent and for how many years before they become too congested to move traffic effectively.

A further analysis of the traffic volume counts revealed that an average of 50% of all Central Business District 24 hour traffic was recorded daily in only a 7-hour period between the morning hours of 7:30 and 11:00 A.M. and the afternoon period from 2:00 and 5:00 P.M., and that peak morning and afternoon hours occurred at 7:45 to 8:45 A.M. and 4:30 to 5:30 P.M. respectively. These peak hour volumes were as follows:

<u>STREET</u>	<u>MORNING PEAK HOUR</u>	<u>EVENING PEAK HOUR</u>
Main Street	2,961	2,611
King Street	1,609	2,392
James Street	1,311	2,331
Bay Street	1,357	1,011
Merrick Street	1,080	960
Hunter Street	870	830

#### CORDON COUNTS

A vehicle cordon count, a recording of all vehicles entering and leaving a given area hourly during a 24 hour day, is another essential study phase. When made for a Central Business District, it tells how many vehicles enter to park and or pass through and the proportionate numbers that come from and depart toward each direction; North, South, East and West, and more specifically which arterials carry the heaviest numbers.



Counts of this type were made by the City Traffic Department annually from 1961 through 1964 and again in 1966, 1967 and 1970 for the Hamilton C.B.D. area bounded on the North by Cannon Street, on the East by Wellington, on the South by Hunter Street and on the West by Bay Street. It will be noted in the graphic illustration below that the heaviest traffic direction increase during the 9-year span was from and to the South which more than doubled from 41,900 to 86,150 with Easterly traffic running a close second from 54,950 to 100,380 or 98.5%. West traffic showed a 32% increase and on the Northside the increase was 27.5%.

#### VEHICLE ACCUMULATION IN C.B.D.

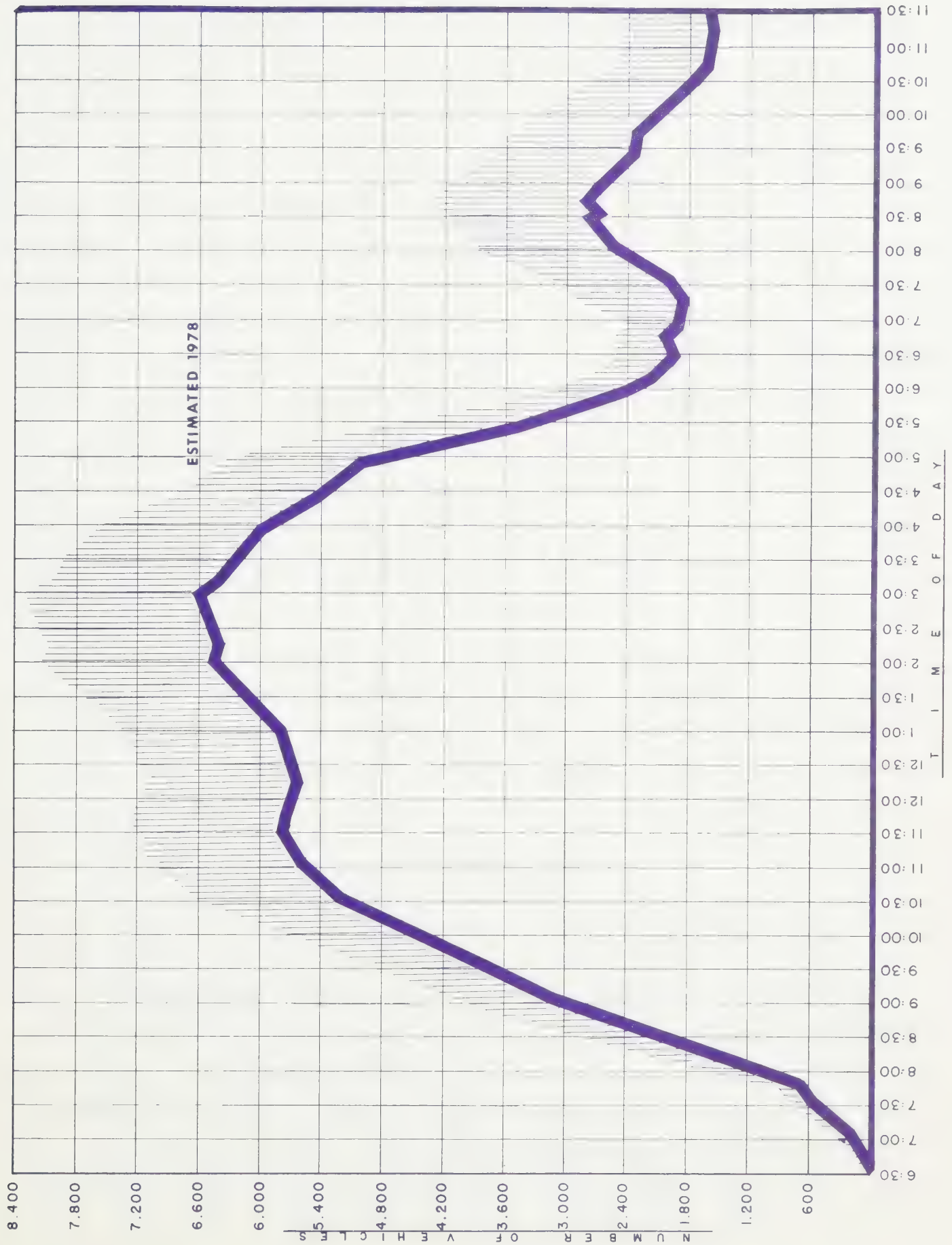
A more detailed analysis of the 1968 "Cordon Count" revealed that a substantially greater number of vehicles enter the C.B.D. during the morning and early afternoon hours, between 7:00 A.M. and 3:00 P.M. than those that leave it, the reason being a "term" destination therein when vehicles must park for various purposes such as work, shopping, business or service visits, etc. The result is a daily "vehicle accumulation" build-up to a peak which occurs between the hours of 2:00 P.M. and 3:00 P.M. In the late afternoon and early evening the reverse is true, however, beginning at 7:15 P.M. another vehicle accumulation begins to occur, peaking at 8:45 P.M., although at a substantially lower density than during the daytime.

The daytime peak reached 6,650 accumulated vehicles at 3:00 P.M. and at night, 8:45 P.M., it was 2,800. See Figure 6 on the page following.

Superimposed on Figure 6 is a projected vehicle accumulation condition within the same Central Business District area by or prior to 1980 after both superblocs have been fully developed as proposed. The estimated increase is a minimum of 25%, however, the total daily accumulation average can reach and exceed an increase of 35%. It already does during the month of December.







PARKING ACCUMULATION CBD 1968



## PRESENT & FUTURE TRAFFIC CONSIDERATIONS

### GENERAL

No major parking facility should be planned without giving due consideration to present and future traffic circulation on adjoining streets and the ability of those streets to absorb and disseminate peak outbound vehicle movements from the parking facility. Such consideration has been given to the proposed Lloyd D. Jackson Square Underground Garage.

The circulation pattern, directional movements of on-street traffic, has a direct effect upon the design of all garage ingress and egress portals, whereas peak period traffic volume plus the number of lanes available to traffic on a particular street are factors governing its capacity and its ability to absorb and to move additional peak vehicle movements which may be thrust thereon by a high density traffic generator such as a multi-level parking structure.

Capacity of streets are generally determined by the maximum number of vehicles which can be moved, at legal speeds, per lane per hour times the number of lanes thereon which are open to traffic. Curbside parking, where permitted, affects the capacity of a street because the parking and deparking movements deter flow on the adjoining lane, thereby reducing its per hour capacity.

### TRAFFIC CIRCULATION

There are four (4) streets surrounding the proposed Lloyd D. Jackson Square Parking garage site. These are King Street on the North, McNab Street on the East, Main Street on the South and Bay Street on the West. Each street is limited to one-way traffic movement, as follows:

<u>STREET</u>	<u>DIRECTION</u>	<u>LOCATION</u>
King Street	Westbound	North of Site
McNab Street	Southbound	East of Site
Main Street	Eastbound	South of Site
Bay Street	Northbound	West of Site

Because both King and Main Streets are the principal traffic carrying streets it was deemed essential that an entrance from and an exit onto each street be pro-



vided at the Lloyd D. Jackson Square garage. Another set of ingress and egress portals were also assigned to the garage on the Bay Street side. However, before doing so, it was advisable to check present street traffic and to project future growth traffic. This was done with the following results:

PRESENT STREET CONDITIONS

<u>Street</u>	<u>No.of Lanes</u>	<u>Estimated +Capacity</u>	<u>Peak Hr. +Volume</u>	<u>Per cent of Capacity</u>
King	5	4,000	2,392	60%
Main	5	4,000	2,961	74%
Bay	<u>3*</u>	<u>2,400</u>	<u>1,357</u>	<u>57%</u>
TOTALS	13	+ 10,400	+ 6,710	65%

+ = Vehicles per hour

\* = Bay Street is to be widened by 2 lanes in the near future. This will increase its capacity to 4,000 and reduce its use percentage to approximately 35%.

Traffic volumes on the City's two principal Central Business District East-West arterial streets, Main and King, are increasing steadily and it is anticipated that by 1980 each street will experience a 25% traffic growth bringing each to its peak rated capacity use. The Lloyd D. Jackson Square garage should also be operating at almost peak use capacity, however, garage exiting traffic peaks should not exceed 600 vehicles during the heaviest street traffic hour. Furthermore, these 600 vehicles will, in reality, be a part of the street traffic volume, as tallied into and out of the study area, and should therefor not be added to the projected future volumes but should be included therein.





## APPRAISAL OF PARKING NEEDS

### GENERAL

The parking space use studies revealed one form of parking space demand by actual count of vehicles using the existing spaces which serve present demand. This method does not provide a completely accurate record because during peak periods when certain facilities are saturated to and beyond capacity, there is no way in which the rejected motorists can be tabulated. Nor does it determine the parking demand of future generators such as those proposed for the Lloyd D. Jackson Square and the Yale Properties super-block developments.

It was therefor advisable to employ an additional method for determining the need or demand for parking spaces. This could best be done by applying a space requirement factor to each type of land and building use, other than parking, within the total study area to the rentable square footage available. This method is of particular importance in its application herein because of new commercial, office, theater, Art Gallery, convention center, banking, motor hotel and apartment buildings being planned for the area. Briefly, there is a different space requirement for each type of use, ranging anywhere from .25 spaces per 1,000 sq. ft. of warehousing or storage space, to as much as 10.0 spaces per 1,000 sq. ft. of peak period banking space use, with most other uses calling for 1.0 to 3.0 spaces per 1,000 sq. ft. By applying this method and its applicable factors, the following data and space requirements were developed.

### PARKING DEMAND - BLOCK BY BLOCK

Only fifteen (15) of the nineteen blocks in the study area were included in developing this information because the four (4) blocks East of James Street were considered to be out of range of influence of the proposed garage. The curb and off-street existing and future capacities were listed separately while the demand figures were stated as composite requirements for each block.

It will be noted in the following table that the 1971 existing total parking supply was 2,169 spaces, all off-street, whereas the demand of existing buildings to remain with a total floor area of 1,166,000 square feet was estimated to be 1,700



spaces , or 469 less than the present capacity .

Future supply and demand totals will alter considerably and this should occur in the near future , 1972 - 1974 , when the City completes its theater , Trade and Convention Center and Art Gallery projects , one in progress and two being planned , and when Yale Properties , Limited completes its 7-block multi-development complex by mid-1976 .

According to the current study , there is a present parking space surplus within the large 19 square block area due principally to the building demolition that has been under way for the Lloyd D. Jackson Square development projects .

In 1976 , if building plans materialize as presently scheduled , increasing the area's building floor area to 4 ,108 ,743 square feet , with only 2 ,008 new parking spaces proposed , while 905 are being eliminated ,the surplus will be displaced by a deficiency that should reach and exceed 1 ,025 spaces unless greater off-street parking facilities , than proposed , are developed . This condition should become more critical by 1980 as additional scheduled non-parking building developments are completed . The shortage of parking in the study area by that time should increase to approximately 1 ,728 spaces as demand therein is estimated to climb to nearly 5 ,000 spaces while capacity should remain at only approximately 3 ,272 spaces according to present plans .

Shown below is a summary table of supply vs . demand for the years 1971 , 1976 and 1980

PRESENT & FUTURE PARKING NEEDS

<u>Year</u>	<u>Existing Spaces</u>	<u>New Spaces</u>	<u>Total Supply</u>	<u>Demand</u>	<u>Net Surplus or Deficiency</u>
1971	2 ,169	- 0 -	2 ,169	1 ,700	+ 434
1976	1 ,264	2 ,008	3 ,272	4 ,300	- 1 ,028
1980	3 ,272	- 0 -	3 ,272	5 ,000	- 1 ,728

The above net parking space deficiencies , as shown for 1976 and 1980 are estimated to exist after the City's proposed 870 space L. D. Jackson Square garage and 1 ,138 spaces in the Yale Properties super-block have been developed .



## PROPOSED PARKING DEVELOPMENT

### GENERAL

This chapter of the report deals primarily with determining the size, physical characteristics, space capacity and location of the parking structure required to serve the City's Lloyd D. Jackson Square super-block development. In the preceding chapter, "Appraisal of Parking Needs", it was determined that a substantial parking deficiency (1,728 spaces) will still exist in 1980 after all new parking facilities, as proposed, have been provided.

In view of these findings it has become essential that consideration be given to provide the greatest number of spaces within the Lloyd D. Jackson garage and in the Yale Properties Development that will be both physically and economically feasible. Actually, it is the Yale Properties development which will be causing the bulk of the excess deficiency because only 1,138 parking spaces are to be provided to serve a total commercial, office, hotel, theater and apartments area of 2,307,743 square feet, whereas the estimated need exceeds 2,600 spaces.

### PARKING FACILITY PROPOSED

It was originally proposed by the City to provide a total of 800 spaces in the Lloyd D. Jackson Square garage project and within a ground area in excess of 190,000 square feet or 4.4 acres. However, this team of design consultants has developed a practical plan for a larger structure (870 spaces) that will occupy an underground smaller area of 140,000 square feet or 3.2 acres. In doing so, full consideration was given to the plan originally proposed as well as several possible alternates. The decision to reduce the land coverage area was finally promoted by two major contributing factors.

1. A parking development under the proposed Trade and Convention Center would have necessitated substantially stronger and more costly columns and foundations to support the 300 to 350 lbs. per square foot floor load requirements of the Trade and Convention Center causing an excessive cost burden to the garage.
2. The land tax would have been nearly 30% greater; another unnecessary burden upon the parking facilities economics.



## CONDITIONS GOVERNING THE DESIGN

Several other important conditions also governed the development of design for this parking facility. These conditions were:

1. The existing traffic circulation pattern and peak period present and future traffic volumes on the streets surrounding the project site.
2. The pending street closures and the impact of displaced traffic on other streets.
3. The proposed expansion, Northward, of the Board of Education Building.
4. The proposed Trade and Convention Center.
5. The need to provide large truck service docks and access thereto at the two above buildings, to the Theater which is already under construction and to the proposed Art Gallery structure which will be developed atop a portion of the parking structure.
6. The need to provide proper pedestrian circulation and communication between the garage and all adjoining buildings.
7. The automobile and taxi access to main entrances of all buildings from all adjoining streets.

## DESIGN RECOMMENDED

A finally selected design places the parking structure under an "L" shaped land area which lies partly behind and to the North of the Board of Education Building and partly between the Board of Education Building and the Civic Theater and the proposed Trade and Convention Center. A vehicular exit tunnel has been provided to run from the East side of the garage's first sub-level, Eastward to McNab Street where it will connect into two exit ramps one to the North into King Street and the other to the South into Main Street. This design is graphically illustrated on design sheets #1, #2 and #3, indicated as Figures #7, 8 and 9, following.





Although the schematic design plans show a roof on the parking structure, it will be most impractical to include said roof for several important reasons. Therefor the construction and total development cost estimates are based upon the top parking deck and the exit tunnel to McNab Street being exposed or roofless. Principal reasons for this are:

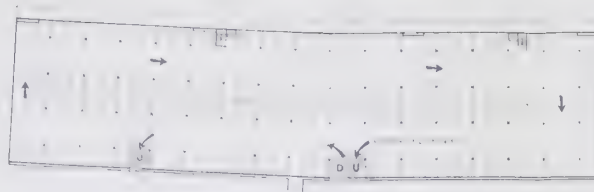
1. Lack of information as to size and location of utilities required to serve the Art Gallery and the Trade and Convention Center (both yet to be designed) precludes any ceiling height and top of slab elevations.
2. Cost of Art Gallery first floor, over garage area, and part of Trade and Convention Center floor, over exit tunnel, should not be charged against the garage.
3. Lack of information relating to the location and size of elevator and stair shaft or shafts required to service the Art Gallery.
4. Possible addition of some parking on the Westerly portion of what would have possibly been a landscaped roof area.

It is evident that a roof deck over the garage cannot be included because of physical considerations tied to future buildings, however, the economic reason is also most important. The estimated additional cost burden which would be placed upon the parking facility is approximately \$800,000 or 25%. If parking would be included on a roof portion, between the Board of Education Building and King Street to house, say 100 spaces, then this portion of the roof area can be included in the garage construction stage.



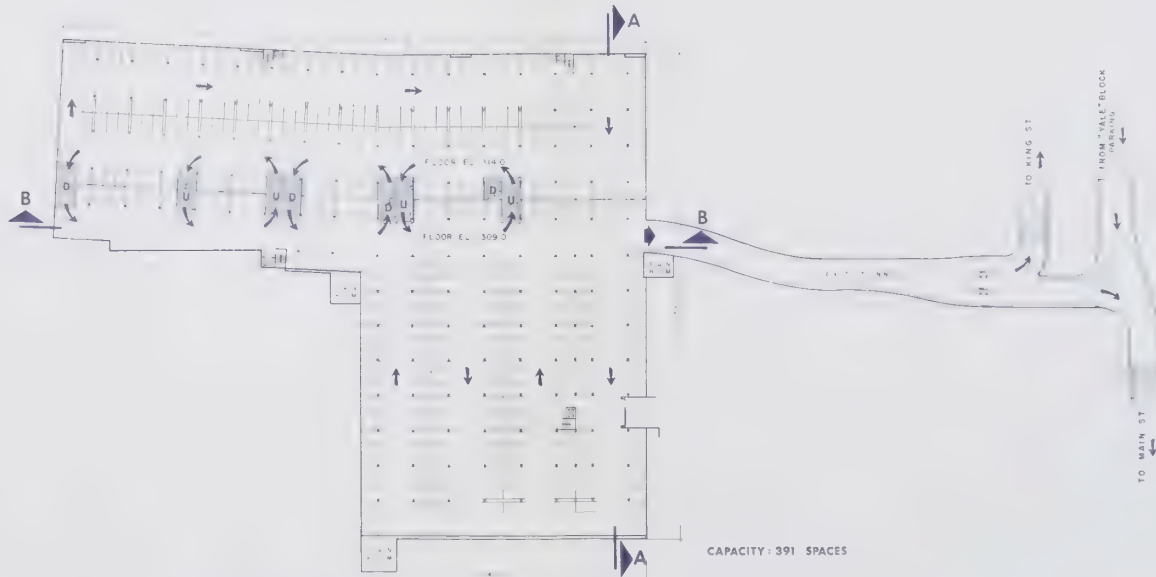






CAPACITY: 183 SPACES

### THIRD SUB-LEVEL PLAN



CAPACITY: 391 SPACES

### SECOND SUB-LEVEL PLAN

FIG.8

<p>ELECTRICAL ENGINEERS</p> <p><b>QUIST &amp; ASSOCIATES</b></p> <p>CONSULTING PROFESSIONAL ENGINEERS</p> <p>HAMILTON ONTARIO</p>	<p>MECHANICAL ENGINEERS</p> <p><b>L.H. SCHWINDT &amp; CO. LIMITED</b></p> <p>ENGINEERS</p> <p>BURLINGTON ONTARIO</p>	<p>STRUCTURAL ENGINEERS</p> <p>FOUNDATION OF CANADA ENGINEERING CORPORATION LIMITED</p> <p><b>FENCO</b></p> <p>HAMILTON ONTARIO</p>	<p>PARKING DESIGN CONSULTANT</p> <p><b>E. A. BARTON &amp; ASSOCIATES LIMITED</b></p> <p>PARKING TRAFFIC TRANSPORTATION PLANNING</p> <p>TORONTO, ONTARIO CLEVELAND, OHIO</p>	<p>REVISED</p> <p>DRAWN BY R.E.D.</p> <p>APPROVED E.A.B.</p>	<p><b>LLOYD D. JACKSON SQUARE</b></p> <p><b>UNDERGROUND PARKING GARAGE</b></p> <p>HAMILTON ONTARIO</p>	<p>SHEET NO</p> <p><b>2</b></p> <p>DATE: 12-1972</p>
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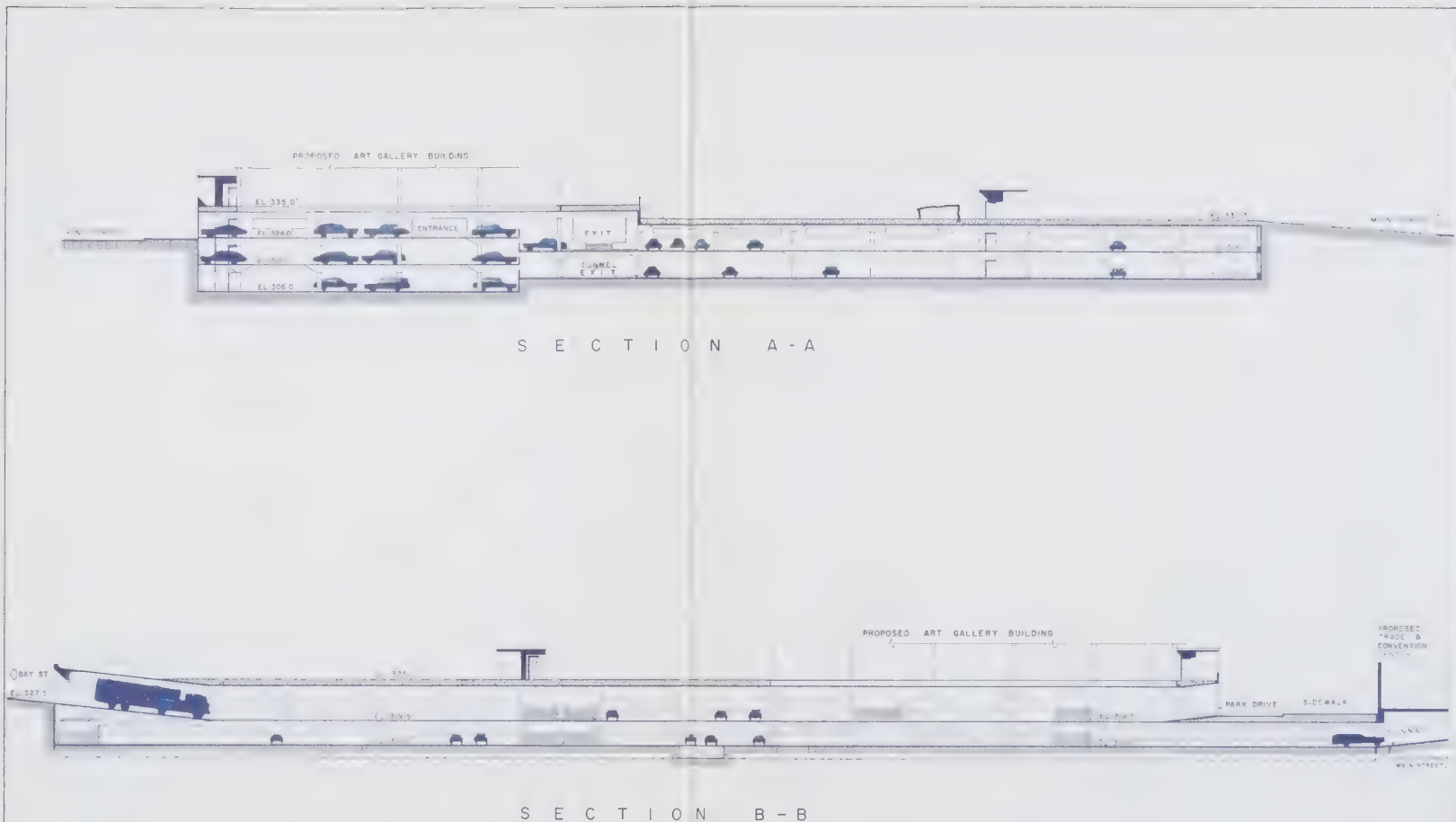


FIG.9

<p>ELECTRICAL ENGINEERS</p> <p><b>QUIST &amp; ASSOCIATES</b> LIMITED</p> <p>CONSULTING PROFESSIONAL ENGINEERS</p> <p>HAMILTON ONTARIO</p>	<p>MECHANICAL ENGINEERS</p> <p><b>L.H. SCHWINDT &amp; CO. LIMITED</b></p> <p>ENGINEERS</p> <p>BURLINGTON ONTARIO</p>	<p>STRUCTURAL ENGINEERS</p> <p>FOUNDATION OF CANADA ENGINEERING CORPORATION LIMITED</p> <p><b>FENCO</b></p> <p>HAMILTON ONTARIO</p>	<p>PARKING DESIGN CONSULTANT</p> <p><b>E. A. BARTON &amp; ASSOCIATES LIMITED</b></p> <p>PARKING TRAFFIC TRANSPORTATION PLANNING</p> <p>TORONTO, ONTARIO CLEVELAND, OHIO</p>	<p>DESIGNED BY</p> <p>CHECKED BY</p> <p>APPROVED BY</p>	<p><b>LLOYD D JACKSON SQUARE</b></p> <p><b>UNDERGROUND PARKING GARAGE</b></p> <p>HAMILTON ONTARIO</p> <p>DATE: 11-12-1972</p>
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① 38,000 sq ft behind the Board  
of Education with two ramps. \$ 325,000

② If art Gallery  $\frac{2}{3}$  occupied then the  
cost would cost between 150,000  
to 175,000

## ECONOMIC ANALYSIS

### GENERAL

This study consisted of a dual approach, one which considered existing office buildings and commercial and institutional establishments which are to remain and the other being an evaluation of partially "knowns"; they being the proposed new office buildings, a theater, a trade and convention center, an Art Gallery, a Motor Hotel, apartments and commercial establishments as part of the Lloyd D. Jackson Square and the proposed Yale Properties Limited Development.

On pages following, are shown budget cost estimates, projections of gross and net revenues for the proposed Lloyd D. Jackson Square Underground garage, estimates of operating and maintenance costs, and a projected debt cover statement.

### PROJECT DEVELOPMENT COST ESTIMATES

The construction and total development cost estimates shown for the multi-deck space garage under the Lloyd D. Jackson Square is for budgetary purposes only. Although they are based upon current known construction and financing costs, it will be advisable to confirm or substantiate them after comprehensive approved preliminary plans and specifications have been developed.

#### PROJECTED DEVELOPMENT COST ESTIMATES - 870 SPACES

##### A. Construction Cost

<u>Item</u>	<u>Estimated Cost</u>	
1. Garage Construction	\$2,550,000	
2. Tunnel Construction	210,000	
3. McNab Street Ramp Connections	100,000	
4. Revenue Controls & Signs	150,000	
5. Contingencies	100,000	
6. Capitalized Interest	<u>125,000</u>	
Total Construction Cost		\$3,235,000

##### B. Design, Legal & Misc.

<u>Item</u>		
1. Engineering	\$ 165,000	
2. Legal, Financing, Etc.	<u>75,000</u>	
Total Additional Charges		<u>\$ 240,000</u>

##### C. Total Development Cost \$3,475,000



The project development cost as shown herein, covers a garage structure without a roof level. In the preceding chapter, reasons for omitting a roof-level are clearly stated, however, if some roof-level parking is also desired, as suggested in the November 25, 1971, letter to the Board of Education Property Committee from its Secretary-Treasurer, it would seem advisable to construct at least a partial roof for that purpose over the garage area running from Bay Street Eastward for a distance of approximately 232 feet, or eight 29' bays.

The total development cost for this additional area of approximately 38,000 square feet, plus two separate access and egress ramps from Bay Street is estimated to be \$325,000, of which \$305,000 would be for construction and \$20,000 for engineering, legal and financing charges. This would bring the total construction cost estimate to \$3,540,000 and the total development cost to \$3,800,000, however the parking capacity would be increased by 110 spaces for a new total of 980 spaces. Estimated per space costs for the two alternates, Plan "A" with 870 spaces and Plan "B" with 980 spaces are as follows:

ESTIMATED COST PER PARKING SPACE

	<u>Plan "A"</u> <u>870 Spaces</u>	<u>Plan "B"</u> <u>980 Spaces</u>
Garage Construction	\$3,680	\$3,600
Tunnel to McNab Street	12	12
Ramps in McNab Street	28	28
Engineering, etc.	<u>270</u>	<u>260</u>
Total Development Cost	\$3,990	\$3,900

It should be noted at this point that the entire design team of Barton, Fenco, Quist and Schwindt participated in the preparation of cost estimates with quantitative budget estimates prepared by each consultant. Furthermore, each member of the team did some physical design calculations and plan studies although this work was not part of our agreement with the City. They did so in order to be able to obtain more realistic budget cost estimates for the entire project.



## PROJECTED GROSS & NET REVENUES

It will be noted in Chapter III, page 10, that off-street parking rates in this area of downtown Hamilton range from \$1.00 to \$2.00 for all day periods, even 10 or more hours with the average being approximately \$1.50, which is comparable to national average for cities of this size. Hourly rates in the off-street facilities range from .10 cents to .35 cents for the first 1/2 hour to .25¢ and .35¢ the first hour. Additional half hours are also .10¢ to .35¢ and additional hours from .15¢ to .40¢ each. Evening rates are presently .35¢ to .50¢.

It is proposed that only slightly higher rates be charged in the Lloyd D. Jackson Square Garage partly because it will provide under cover parking and partly because current rates as well as living costs should be higher in two (2) years when this facility should be in operation. See schedule below for recommended rates.

### PROPOSED PARKING RATES

	<u>1st 2 Years</u>	<u>5th Year</u>	<u>10th Year</u>
<u>DAY RATES</u>			
First Hour	\$ .35	\$ .40	\$ .45
Second Hour	.30	.35	.40
Ea. Add'l Hour	.25	.30	.35
9 Hours Max.	1.80	2.00	2.25
10 to 12 Hours	2.00	2.25	2.50
24 Hours	2.50	2.75	3.00
<u>EVENING RATES</u>			
First Hour	\$ .35	\$ .40	\$ .45
Ea. Add'l Hour	.20	.25	.30
Six Hours Max.	.90	1.10	1.35
Overnight to 8:00 A.M.	1.10	1.25	1.40
<u>MONTHLY RATES</u>			
Days - Storage	\$ 30.00	\$35.00	\$ 40.00
Days - In & Out	35.00	40.00	45.00
24 Hours	40.00	45.00	50.00





PROJECTED GROSS REVENUES

LLOYD D. JACKSON SQUARE PARKING PROJECT - 870 SPACES

AVERAGE OF 1ST & 2ND  
YEARS OF OPERATION

<u>Type Parker</u>	<u>Spaces Used</u>	<u>Days Pr/Yr</u>	<u>Cars Per Space</u>	<u>Total Per Year</u>	<u>Aver. Car Fee</u>	<u>Month Rate</u>	<u>Gross Revenue</u>
Day Transient	670	300	2.4	482,400	.70		\$337,680
Evening Transient	300	250	1.0	75,000	.70		52,500
All Day Transient	100	250	1.0	25,000	1.80		45,000
All Day Monthly	<u>100</u>	300	1.0	<u>30,000</u>		30.00	<u>36,000</u>
TOTALS:	870			612,400			\$471,180

5TH YEAR OF OPERATION

Day Transient	650	300	2.8	546,000	.75		\$409,500
Evening Transient	400	250	1.0	100,000	.75		75,000
All Day Transient	120	250	1.0	30,000	2.00		60,000
All Day Monthly	<u>100</u>	300	1.0	<u>30,000</u>		35.00	<u>42,000</u>
TOTALS	870			706,000			\$586,500

6TH TO 10TH YEARS

Day Transient	650	300	3.0	585,000	.85		\$497,250
Evening Transient	400	250	1.0	100,000	.85		85,000
All Day Transient	120	250	1.0	30,000	2.25		67,500
All Day Monthly	<u>100</u>	300	1.0	<u>30,000</u>		40.00	<u>48,000</u>
TOTALS:	870			745,000			\$697,750

11TH & SUCCEEDING YEARS

Day Transient	650	300	3.2	624,000	.90		\$561,600
Evening Transient	400	250	1.0	100,000	.90		90,000
All Day Transient	120	250	1.0	30,000	2.50		75,000
All Day Monthly	<u>100</u>	300	1.0	<u>30,000</u>		45.00	<u>54,000</u>
TOTALS:	870			784,000			\$780,600



ESTIMATED OPERATING EXPENSE

FOR

LLOYD D. JACKSON SQUARE - 870 SPACES - SELF PARK

GARAGE PERSONNEL REQUIRED AND WAGE SCALE

<u>TYPE</u>	<u>Number Required</u>	<u>Annual Salary</u>	<u>Weekly Salary</u>	<u>Total</u>
*Managerial Services	0.25	\$15,000	--	\$ 3,750
*Accounting Services	0.25	9,000	--	2,250
Cashiers	5.0	6,136	118.00	30,680
Working Supervisors	2.0	7,280	140.00	14,560
*Janitors	<u>0.5</u>	5,200	100.00	<u>2,600</u>
TOTALS	8.0			\$ 53,840

\*Part Time

GENERAL EXPENSES

Insurance (Fire, Theft, etc.)	\$ 600
Employees Pension & Ins., etc.	9,100
Utilities, Heating, Water	10,700
Supplies	1,200
Parking Checks	1,000
Uniforms	760
Professional Services	1,500
Loss and Damage	1,000
Auditing	1,000
Maintenance, Elev. & Mach.	4,400
Telephone, etc.	300
*Misc. Expenses	2,600
Realty & Business Tax	<u>100,000</u>
	<u>\$134,160</u>

\*Miscellaneous expenses includes replacement of lights, ballasts, starters, paints, and other costs of repairs to building & equipment.

1ST & 2ND YEAR AVER. - GARAGE OPER. EXPENSE	\$188,000
5TH YEAR OF OPERATION	200,000
11TH YEAR OF OPERATION	225,000



ESTIMATED SUMMARY - OPERATING STATEMENT

LLOYD D. JACKSON SQ. GARAGE - 870 SPACES

<u>Operating Costs</u>	<u>Annual Average 1st Two Years</u>	<u>5th Year Oper.</u>	<u>Annual Average 6th to 10th Yrs.</u>	<u>11th and Succ. Yrs.</u>
Gross Revenues	\$ 471,180	\$ 586,500	\$ 697,750	\$ 780,600
Oper. Costs & Taxes	<u>188,000</u>	<u>200,000</u>	<u>215,000</u>	<u>225,000</u>
NET REVENUES	\$ 283,180	\$ 386,500	\$ 482,750	\$ 555,600
Debt Payment on \$3,400,000 Bonds (20 Yrs.)	<u>\$ 341,280</u>	<u>\$ 341,280</u>	<u>\$ 341,280</u>	<u>\$ 341,280</u>
NET SURPLUS or (DEFICIT)	( \$ 58,100)	\$ 45,220	\$ 141,470	\$ 214,320
*Debt Cover Factor	0.83x	1.13x	1.41x	1.63x
* = Principal and Interest				

The Debt Service coverage factors shown are based upon a 20 year maximum term presently allowable by law. When annual average "even payments", interest and principal, were determined at an 8.0% bond interest, they amounted to approximately \$341,280. It can be seen that the first two (2) years net operating revenues will be about \$58,100 short of the required debt payments. However, in the fifth year, the actual "even pay" coverage factor should exceed interest and principal payments by \$45,000 and in the 11th and succeeding years it should surpass \$214,000 or .63 times the required principal and interest, debt service payments.

Although the first two (2) years average income from this facility is insufficient to meet the required debt service payments, it should be pointed out that this project shall become a part of the municipal parking system now in operation and that surplus revenues from the present "system" can be pledged to support this proposed new facility until such time as its net revenues become sufficient to meet requirements. This pledge may not have to be actually expended for any payments if all proposed parking generators are developed as planned.



At the present time, all off-street parking obligations, including debt service payments and operating expenses, are being met from current off-street revenues thereby leaving the net meter revenues unencumbered and available to support additional off-street parking facilities.

#### SUPPORT FROM PRESENT PARKING REVENUES

There is some additional financial support possible which, if pledged to the Lloyd D. Jackson Square Garage project, can increase its debt service coverage factor which could result in a lowered interest rate on a certain type of financing. These additional funds are the net or excess revenue derived by the Parking Authority of the City of Hamilton from its operation of existing parking facilities.

In 1970, this annual net surplus amounted to a total of \$203,190 of which \$67,694.82 was from off-street facilities and \$126,096 from on-street meters. Only \$70,000 is actually needed and for only a five (5) year period to assure an annual cumulative surplus of \$150,000 which would provide a 1.5 times the principal and interest payments needed to obtain a competitive interest rate.

Recently, the T. Eaton Company has optioned to purchase the City's Market Square Carpark structure which is located near its department store. This facility contains a total of 560 spaces and its current "turnkey" replacement cost, exclusive of land is estimated at \$1,512,000. It is proposed that all or at least a substantial portion of the proceeds from the sale of this garage be allocated toward the amortization of the Lloyd D. Jackson Square Garage and, if not, that it be allocated to the development of another "replacement" parking structure in the Central Business District.





## CONCLUSIONS

### GENERAL

It is believed that the intent and purpose of this feasibility study of the proposed Lloyd D. Jackson Square Parking Garage have been fully carried out. This team of consultants has conducted all investigations and field surveys and has made certain detailed design studies and calculations, all of which were deemed essential to assure results that would produce (1) the best possible physical design plan, (2) a proper integration of this design with access to the present and proposed buildings the garage is to serve, (3) a sound budget estimate of construction and of development cost and (4) a realistic economic analysis of gross revenue cost, debt service payments, taxes and net revenue projections.

The results of surveys, investigations, design studies and economic considerations are described in detail in the preceeding chapters of this report. However, it was deemed advisable to briefly summarize the findings and to set forth specific conclusions relating to each chapter, the purpose being to provide as clear a basis as possible for justifying the recommendations which follow.

### RELATING TO PURPOSE & SCOPE OF STUDY

When the study was initiated, it was done so with the understanding that the proposed Lloyd D. Jackson Square Garage configuration could extend from Bay Street to McNab Street and between Main and King Streets. As a result, the study area was defined to include four city blocks west of James Street to Hughson Street which lies two blocks East of McNab Street. All field work and other investigations were concentrated on this 19 City block area as can be seen on Figures #1 and #4. However, after it was determined that a shorter physical garage design configuration, ending at Park Street rather than at McNab, would be in the best interests of the City, all data relating to buildings located within the four blocks East of James Street were deleted from this report and only inclusions were the two small parking lots, one for 36 spaces on Hughson at King William Street and the other with 80 spaces being on Jackson Street, East of James Street.



### RELATING TO GROWTH TRENDS

The City of Hamilton has a 30 year record of continuous steady growth averaging slightly more than 3.0% per year increase in population since 1941, for a cumulative total of 92 per cent. Vehicle registrations have increased at a more rapid pace than has its population, up 142% in only 20 years for an average of 7.0% per annum and industrial growth, retail sales, family incomes and per capita buying power have also increased steadily in the Metropolitan Hamilton area. Such a steady and continued growth of the city, in all respects, indicates a healthy community and one that is destined to maintain its strong economic stability for many years into the future.

### RELATING TO EXISTING PHYSICAL CONDITIONS

A study of the present physical conditions within the area comprising the equivalent of 15 city blocks, as bounded by Merrick, James, Hunter and Bay Streets and in four (4) partial blocks on the West side of Bay Street, revealed that all streets are limited to one directional traffic movements and that there are 15 office and commercial buildings, 2 churches, 41 residential buildings and the City Hall office building, all of which are destined to remain for at least several years. These buildings comprise a gross floor area of 1,166,000 square feet. It is believed that many of the residences and lower quality commercial buildings located on the West side of Bay Street will be replaced by larger and more modern commercial buildings after the Civic and Yale Properties "superblocks" have been developed, thereby further adding to the City's total tax ratable property values.

The study area also revealed a total of 18 off-street surface type parking lots and one multi-level parking structure, all having a combined capacity of 2,109 spaces. However, there was virtually no on-street parking within the area studied and in the rest of the Central Business District "Core" area because it had been gradually eliminated in recent years to provide adequate peak period street traffic circulation lane capacities.



## RELATING TO PARKING RATES & SPACE UTILIZATION

Downtown Hamilton parking rates have risen in recent years but not in keeping with other cost of living increases. It was found that they are 25 to 30% below the average rates for other comparable size cities or in fringe C.B.D. areas of larger cities such as Toronto, Winnipeg, Vancouver and Montreal. The first 1/2 hour and 1st hour rates in the Hamilton C.B.D. area studied are .25 to .35 cents and .50 to .70 cents respectively whereas in other similar size cities and large city C.B.D. fringe areas the 1/2 hour rate average is 40 to 50 and the first hour ranges from .65 to 90 cents.

There is no doubt that as new parking generator office, commercial and institutional buildings are added to downtown Hamilton while more and more on-street parking is eliminated, the law of supply and demand will cause operators of off-street parking facilities to increase rates accordingly thereby bringing them more in line with averages in other cities.

A study of parking space usage revealed that there is no parking deficiency at present and that in fact there is a surplus because only five (5) of the 19 facilities reached the full or nearly full status daily. It was further found that this condition is recent, due largely to the demolition of old buildings in preparation for new development construction and that 795 of the existing parking spaces in seven (7) lots are of temporary nature. They are to be replaced by other buildings being planned for the two superblocs.

## RELATING TO PATRON DESIRES

A special interview study among a substantial sampling of nearly 1,400 downtown motorists revealed that even though there is a surplus of approximately 434 parking spaces within the study area, 34% still experienced a difficulty in locating convenient parking. This indicates that the demand is more highly concentrated in certain prime or high density land use areas and that this demand will increase substantially as downtown Hamilton continues its planned growth.

Other highlight results of these interviews were that 66% of all those interviewed were downtown to buy merchandise and that only 48% were Hamilton residents.





The City is fortunate in having such a high downtown "shopper type" motorist. However, there is an excellent reason for this trend. It is the City's growth progress which has been made possible by this Administration and by at least one or two preceding Administrations, which have had the foresight and the courage of their convictions to make "Action" decisions.

#### RELATING TO TRAFFIC CONSIDERATIONS

There are five (5) principal streets which lie adjacent to the two "superblock" development sites. These five are Main, King and Merrick which run Easterly or Westerly and Bay and James which run North and South respectively. Two other streets either run through the blocks or at least well into them, these two being Park and McNab Streets. Park will be closed entirely and McNab will be closed from King Street Northward.

Traffic volume on these streets is well below maximum capacity throughout most of the daytime hours and, during the heaviest peak hour, they range from a high of 57% on Bay Street to a 74% high on Main Street.

The proposed Lloyd D. Jackson Square garage is expected to have a maximum same peak hour (4:30 to 5:30) exodus total of 600 vehicles of which approximately 300 will be destined for Main Street. It would seem that this should add only 10% to the present nearly 3,000 peak hour volume or 7.5% of the total 5 lane capacity of 4,000 per hour. This is not a proper conclusion because most of the vehicles desiring parking in this area are already a part of the on-street traffic volume checked because they utilize these same streets.

Future growth, however, should, by 1980 or 1982, find King, Main and Merrick Streets reaching full lane capacity at least during a peak morning hour and a peak afternoon hour unless other East-West streets are either added or existing streets widened and improved.

#### RELATING TO PARKING NEEDS

When the two "superblocks" have been developed, the area's parking demand





will exceed supply by approximately 1,728 spaces even after all parking as proposed for the two blocks have been provided. Nearly 80% of this deficiency will be due to what we believe to be inadequate parking capacity planned for the Yale Properties multi-building complex.

Our findings indicate that the study area's demand should exceed 5,000 spaces whereas the proposed new and existing parking which is to remain, will number a total of only 3,272 spaces.

#### RELATING TO PROPOSED NEW PARKING

Although the City charged this consulting firm with determining the feasibility of an 800 car space underground garage in Lloyd D. Jackson Square, study findings indicate that there will be a need for a substantially greater number. Also, the initially proposed site contained 4.4 acres under which a physically practical total of 1,200 spaces are possible. A part of the area containing 1.2 acres, if used for parking, would have yielded substantially higher cost spaces because of the very heavy building which would be placed on top of it with the construction of a 180' x 300' trade and convention center having a floor line load requirement of 300 to 350 pounds per square foot.

A selected parking structure design which would yield no less than 870 and as much as 980 or even 1,000 physically practical parking spaces housed within a smaller 3.2 acre area was also found to be more economical yet fully practical operationally.

In developing the design, all known factors relating to adjoining existing and future buildings uses and passenger and commercial vehicle loading requirements were given due consideration and their needs fully met. Street traffic circulation and peak hour garage exodus as well as on-street volumes were evaluated before garage ingress and egress portals were established. This resulted in the placement of one ingress and one egress portals at Main and Bay Streets and one ingress and two egress portals at King Street. (See Figure 7)



## RELATING TO ECONOMIC ANALYSIS

Project development cost estimates for the Lloyd D. Jackson Square garage were developed by each of the four members of the Barton consulting team, comprised of "Fenco", "Quist" and "Schwindt" as well as "Barton". Each respective major trade estimate was prepared only after some detailed design calculations and drawings were prepared therefor, the total construction cost estimate of \$3,235,000 for an 870 space garage and \$3,540,000 for 980 spaces is considered to be substantially realistic, at least within 5.0% of what the facility should cost if construction is begun within six months from date of this report. Engineering financing, legal and other costs should increase project costs by \$240,000 and \$260,000 respectively to total development costs of \$3,475,000 and \$3,800,000 each.

Projected gross revenues, at slightly higher than current rates should be adequate by the 3rd year to cover all operating and tax costs and principal and interest payments, but, the first two (2) years are expected to show a deficit averaging nearly \$25,000. A net surplus of 26% should develop in the 5th year and this should climb to 80% or better by the 10th or 11th operating year.

Debt service payments were estimated at 8.0% interest over a 20 year period and on a total of \$3.40 million. Operating costs included an estimated \$100,000 on assessment information received from the Wentworth Assessment Office in Hamilton via Mr. R. C. Monaghan Civic Square Development Coordinator. These operating costs should therefor also be reasonably realistic.

## RELATING TO PROJECT FINANCING

During the course of finalizing the feasibility report, this consultant has maintained a close liaison with and participated in several meetings with a number of private investment groups, solely for the purpose of determining whether one of them would be interested in developing the Lloyd D. Jackson Square Garage at no cost to the City, then vesting title to it in the City but lease operating the garage for 25 or 30 years and vacating it at the expiration of the lease term.



Two such groups have indicated a very serious interest, one being an all Canada group comprised of participants from the Cities of Winnipeg and Montreal and the other being a combined Canada - U.S. group consisting of Toronto and Cleveland members.

It is believed that the city should give serious consideration to this source type of project financing as it would not encumber the city's borrowing means which, it is understood, are already taxed to their legal limits.





## RECOMMENDATIONS

Results of an appraisal and an evaluation of all study findings confirmed the fact that there will be a definite need for the Lloyd D. Jackson Square garage and that the parking demand to be generated by all buildings as proposed will exceed 1,000 spaces. It was also determined that revenues generated will be sufficient after the first two or three years to cover all costs, charges and debt service payments, but that the first two years are expected to show an operating deficit of approximately \$25,000 per annum. Nevertheless, the following recommendations are presented for consideration by the City of Hamilton Board of Control.

We therefor recommend:

1. That the Lloyd D. Jackson Square parking garage, as proposed but to contain a minimum of 870 spaces and perhaps 980 to 1,000 if partial area roof parking is acceptable, be approved for planning and construction at the earliest possible date.
2. That the garage design be patterned in accordance with the schematic plans contained in this report (Figures #7, 8 and 9) in order to assure proper ingress, egress, pedestrian access and commercial vehicle loading facilities as needed to serve the existing Board of Education and proposed Art Gallery buildings.
3. That parking minimum rates as proposed on page 43 of this report be established.
4. That a roofless parking structure be approved for initial development with perhaps the exception of a westerly portion behind the Board of Education Building, provided this roof portion is approved to contain surface parking aimed at exclusively serving the Board of Education building. If a partial parking roof is approved, then this roof area should be provided with its own separate entrance and exit ramps.



5. That a vehicle exit tunnel be provided just north of theater building to connect the East lower exit portal of the garage with exit ramps in McNab Street, one Southward to Main Street, and the other Northward to King Street.
6. That proper consideration be given in the garage and tunnel design to provide an adequate number of air changes in its ventilation system to assure an ecology-safe facility, with special emphasis to be placed upon the tunnel where slow moving bumper to bumper lines of vehicles will be emitting a high density of carbon monoxide as they await their turn to pay parking fees and to exit via King and/or Main Street.
7. That the parking facility be equipped with a semi-automated operating and revenue control system in order to assure maximum efficiency and service to the public at a minimum of manpower requirement. The initial cost of this equipment plus related illuminated signs can be amortized in a few years with the saving in labor.
8. That consideration be given to the construction of a pedestrian skywalk from the top or roof level, subsequently also the Art Gallery first floor level, across King Street to a point in the Yale Properties development.
9. That pedestrian access points to be provided between the garage and all of the existing adjoining and proposed buildings within the Civic Center "super-block".
10. That serious consideration be given to encouraging the financing and development of this parking facility by private investors, with the understanding that the city would take possession, at no cost, after a predetermined term of years.







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